ICT FACILITIES AND SERVICES IN LIBRARIES OF MEDICAL EDUCATION INSTITUTIONS IN TAMIL NADU: AN ANALYTICAL STUDY

THESIS

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By

G RAVI SANKAR

Supervisor

Prof B RAMESH BABU

DEPARTMENT OF INFORMATION SCIENCE
UNIVERSITY OF MADRAS
CHENNAI - 600 005
INDIA

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Dr B RAMESH BABU
M.A., M. Com, M.Lib.Sc, Ph.D.,
Dip. in Tamil
Professor

Dept. of Information Science
University of Madras
Chennai – 600 005
Email : beeraka_r@yahoo.co.uk
Phone : 044-25399673 (O) Direct
044-25954932 (R)
Mobile: 0-9444311313

CERTIFICATE

This is to certify that the thesis entitled, **"ICT FACILITIES AND SERVICES IN LIBRARIES OF MEDICAL EDUCATION INSTITUTIONS IN TAMIL NADU: AN ANALYTICAL STUDY"** submitted by **Mr G RAVI SANKAR** for the Degree of Doctor of Philosophy is a bonafide record of research done by him under my guidance and supervision and that this thesis has not formed the basis for the award to the candidate of any Degree, Diploma, Associateship, Fellowship or other similar title.

Also certified that this thesis represents an independent work on the part of the candidate.

Chennai

Date: 24.02.2009

B RAMESH BABU

DECLARATION

I hereby declare that this thesis entitled, **"ICT FACILITIES AND SERVICES IN LIBRARIES OF MEDICAL EDUCATION INSTITUTIONS IN TAMIL NADU: AN ANALYTICAL STUDY"** is the result of investigation for the Degree of Doctor of Philosophy in Library and Information Science, University of Madras. The entire research work was carried out by me under the guidance and supervision of **Dr B RAMESH BABU**, Professor, Department of Information Science, University of Madras, Chennai.

I further submit that this thesis has not been previously submitted in part or in full by me for any Degree or Diploma to any University or Institution.

Chennai **G RAVI SANKAR**

Date : 24.02.2009

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LIST OF ABBREVIATIONS

AACR	Anglo American Cataloguing Rules
ALA	American Library Association
AMC	Annual Maintenance Cost
ANOVA	Analysis of Variance
BDS	Bachelor of Dental Surgery
BOT	Bachelor of Occupational Therapy
BPT	Bachelor of Physiotherapy
BRS	Bibliographic Retrieval Services
BSNL	Bharat Sanchar Nigam Limited
C.M.C	Christian Medical College
CAS	Current Awareness Service
CCC	Classified Catalogue Code
CCF	Common Communication Format
CCIM	Central Council of Indian Medicine
CD	Compact Disc
CD-ROM	Compact Disc Read only Memory
CPE	Continuing Professional Education
CRISP	Computerised Rural Information System Project
DCI	Dental Council of India
DDC	Dewey Decimal Classification
DVD	Digital Video Disc
FORSA	Forum for Resource sharing in Astronomy and Astrophysics
G.C.I.M	Graduate of the College of Indigenous Medicine

HELINET	Health Sciences Library and information Network
HELLIS	Health Literature Library and Information Services
HRD	Human Resource Development
HRM	Human Resource Management
ICT	Information and Communication Technology
INC	Indian Nursing Council
INDEST	Indian National Digital Library in Engineering Science and Technology
INFLIBNET	Information and Library Network
ISBD	International Standard Bibliographic Description
ISO	International Standards Organisation
IT	Information Technology
Kbps	Kilobits per Second
LAN	Local Area Network
LCHS	Library of Congress Subject Headings
LIS	Library and Information Science
M.B.B.S	Bachelor of Medicine and Bachelor of Surgery
MALIBNET	Madras Library Network
MARC 21	Machine Readable Catalogue 21
MCI	Medical Council of India
MEDLARS	Medical Literature Analysis and Retrieval System
MEDLIBCON	Medical Library Consortia
MEDLINE	Medical Literature Analysis and Retrieval System Online
MeSH	Medical Subject Headings
MLAI	Medical Library Association of India
NIC	National Informatics Centre

NISCAIR	National Institute of Science Communication and Information Resources
NML	National Medical Library
OA	Open Access
OPAC	Online Public Access Catalogue
PCI	Pharmacy Council of India
PG	Post Graduate
PhD	Doctor of Philosophy
Ref	Reference
SDI	Selective Dissemination of Information
SINTO	National System of Scientific, Technical and Organizational Information
SPSS	Software Package for Social Sciences
TNMMU	Tamil Nadu Dr.M.G.R.Medical University
UG	Under Graduate
UGC INFONET	University Grants Commission Information Network
UNESCO	United Nations Educational Scientific and Cultural Organisation
USA	United States of America
WAN	Wide Area Network
WHO	World Health Organisation
WWW	World Wide Web

Chapter 1

Introduction

CHAPTER I

INTRODUCTION

1.1 PREAMBLE

India with its huge population has more medical schools and medical students than most other countries in the world. There is a growing realisation that the training of doctors is inadequate to meet the health needs and priorities of the community and therefore restructuring of medical education and delivery of health care services in India is required. Health information is used by many people ranging from doctors, teachers, students, researchers, to administrators, planners, decision-makers and social workers for diagnosis and teaching purposes as well as for taking action-oriented decisions.

Medical libraries play a crucial role in disseminating knowledge to the medical community. Most of the medical colleges have teaching hospitals as appendages. These hospitals do not have a separate library. Hence, a medical college library is the main source of information for the students, teachers and clinical staff working in various specialties. No medical doctor, whether a general practitioner or a specialist, can adequately treat a patient without being informed of new views, new explanations, new treatments procedures, new theories and new approaches in medicine and allied subjects.[1]

It is rather impossible for a doctor to collect necessary information and read it adequately in the limited spare time available to him. As a consequence, medical libraries have indeed a greater responsibility. They

must find the ways and means to acquire the essential information to organise and store in such a way that is easily retrievable and to actively promote its dissemination to those in need.

The growth and development of medical education and medical libraries in developed countries have attained a stage of sophistication. These countries have adapted computer technology and have also developed international information system in health sciences. These automated information systems provide wider access to health information on-line, enabling a direct interaction of the user with database and off-line. The activities of these information systems contribute to the promotion and dissemination of medical information. The medical information in developing countries, particularly in India, is well organised and has reached a stage of relative maturity. In order to meet the demand for medical information, the National Medical Library (India) makes the medical information effectively accessible for use in medical education, research, health care and administration.[2]

1.2 MEDICAL LIBRARY: ROLE AND FUNCTIONS

A medical library maintained in a hospital premises contain a collection of print and online resources on medicine and allied health issues to serve the information and research needs of doctors, nurses, patients and staff. It is usually managed by a librarian. The primary purpose of such a library is to provide scholarly information to support health care, education and

research conducted at these institutions. The mission of medical libraries is to acquire information, organise them to make it available and preserve it. [3]

The term "health science libraries" comprises a variety of libraries such as libraries of medical colleges, research institutes, dental colleges, hospitals, nursing institutions, pharmaceutical companies, government health departments etc. Among these libraries, a medical library has an explicit function as a real centre of intellectual effort and an active educational instrument in modern teaching and research.[4]

1.2.1 Objectives of a Medical Library

Medical library is an integral part of medical facility and is established for the purpose of providing professional education and research materials for the hospital medical staff. Like other libraries, the ultimate aim of the medical library is to cater for the target users, connected with the treatment and nursing of the patient, other health care services and also research activities related to various kinds of diseases of humans and animals. So, it is obvious that the maintenance of the quality services is one of the essential parts of this kind of libraries, because it is a question of life and death. The responsibilities of the personnel of the medical library are somehow greater than the personnel of other libraries. The function of collection, organisation, processing, storing and dissemination is to be done with utmost care.[5]

The aim of a medical library is to assist the professionals in upgrading their knowledge for better patient care, medical education and research. In general, the mission and roles of a medical library include the extent and

scope of definitions of educational objectives, supported by the library such as:

- Educational course offerings;
- Support to Continuing Medical Education course offerings;
- Clinical information services;
- Range of information search services;
- Audio-visual support and management;
- Provision of patient education literature and information service.[6]

The major objectives of a medical library are:

- To provide medical information sources across a wide spectrum of medical knowledge for the teaching–learning process and research;
- To serve physicians, nurses and allied health care professionals;
- To help doctors provide quality care, help patients find information to cope with their health problems;
- To serve various organisations involved in health care; and
- To aid the medical teachers to adapt the latest developments in their area of specialisation.[7]

A medical library assists the professionals in upgrading their knowledge and provides information on new innovations, views, theories and

latest treatment for better patient care, medical education and research. It is the main channel of mobilising information to cater for professional information requirements of the users.

The overall functions of a medical library include building up a comprehensive collection of medical literature, to organise and provide access to the information sources with the help of variety of tools and to retrieve the vast and continuously expanding medical knowledge through multifarious information services.

1.2.2 Role and Functions

Medical libraries play a significant role in society and serve the specific needs of medical undergraduates, post-graduates, interns, house surgeons, senior house officers, research fellows, faculty members and to assist the professional, specialised users in upgrading their knowledge and provide information on the latest authentic views, innovations, latest treatment for better patient care, medical education through the application of various performance standards in practice.

It is in fact an "information laboratory" that presents one of the most important channels for new information entering the institutions. It provides evidence to validate current scientific generalisations and the basis upon which new ideas are built. Medical library is a distinct lot among specialised libraries as it serves the specific needs of specialised users, but its nature is also an indicator of an academic library as it supports and supplements academic medical programmes. Hence, it falls in the category of a special

academic library. A medical library is concerned exclusively or predominantly with materials and information in the medical subject fields which serves either exclusively or largely the members of medical profession or medical students. Traditionally, a medical library is the main channel of bringing information to cater for the information requirements of users.

The scope and functions of medical libraries is now changing with the introduction of information and communication technology. The traditional methods are being reshaped, with the introduction of information and communication technology in the process of transformation of health information. The evolution, from traditional retrieving of "Written work" to the retrieving of electronically stored information, has made a perceptible impact on the medical libraries. The medical libraries in the West include formalised classroom instruction with Computer Assisted Instruction (CAI) programmes.

1.3 APPLICATION OF ICT IN LIBRARIES

Today information and communication technology is transforming the nature, availability and management of information. Due to developments in telecommunication and networking technologies, today's world is becoming more and more interconnected. One of the most exciting manifestations of this interconnectedness is "INTERNET'. Internet usage is increasing rapidly with a trend that shows no sign of diminishing. It is spreading rapidly into our daily life, directly affecting our ideas and behaviour. Internet heralded the

development and implementation of new and innovative teaching strategies in higher education.

Developments in information and communication technologies have an indelible influence on every sphere of academic activity. Information and Communication Technology (ICT) is about achieving the age-old objectives and applications of information and communication in new and more efficient ways which facilitate the process of identification, collection, storing, processing and disseminating of information. The library and information science professionals utilise ICT to keep pace with the challenge of information explosion. The benefit of instant access to digital information is the most distinguishing attribute of the information age.[8]

Since early 80's government and non-government agencies are making efforts to generate an awareness about computers and its potential in rural development. The National Informatics Centre (NIC) was set up and through Computerized Rural Information System Project (CRISP), the NIC and Rural Development Ministry collaborated to deploy ICTs in each District Rural Development Agency (DRDA). The emphasis was on the implementation of ICT, particularly in social sectors like education, health and rural development. ICT has established its utility and significant role in poverty alleviation as experimented worldwide by various development agencies.[9]

The information society has brought about developments in the way information is created, consolidated and accessed. ICT has produced larger volumes of information, new ways of packaging information and new tools

for managing information. These developments require new knowledge and skills of librarians and other information workers to meet the demands of the global economy for information resources and services. Electronic technology, in general, can amplify and augment our abilities and performance as well as disorient and confuse us.[10] Computer applications such as electronic text are causing changes in the fundamental processes of writing and reading and electronic spreadsheets have enabled interactive decision making for individuals and business.[11] The ICT tools can be applied in many ways in the library or the information centre. Some of the important areas of ICT applications are:

1. **Locating information on behalf of users**

   - Define the precise nature of the enquiry in conjunction with the user.
   - Create a search strategy to fully satisfy the user's enquiry.
   - Evaluate the results of the search in terms of validity of information found and its appropriateness in meeting user's needs.

2. **Supporting reader development**

   - Demonstrate an understanding of reader development.
   - Identify, evaluate and use a range of online resources that promote reading to different kinds of users.

- Identify, evaluate and use a range of online resources that promote reading for the users with special needs or with specific language requirements.

3. **Supporting user to ensure effective learning**

- Profile user in terms of ICT competence and learning goals.
- Select a range ICT-based package(s) to support this learning.
- Provide appropriate ICT support to the user in the use of their chosen learning package(s).

4. **Using ICT in professional practice**

- Use an automated library management system proficiently.
- Use and evaluate online selection tools.
- Use ICT in continuing professional development, to join in professional discussions and to improve own professional practice.

5. **Supporting users in the safe and legal use of ICT**

- Demonstrate safe practice relating to the use of ICT for communication.

- Demonstrate ways in which ICT can support users with special needs or with specific language requirements.
- Demonstrate awareness of legislation relating to the use of ICT for storage, manipulation and access to information.
- Demonstrate awareness of Freedom of Information Legislation and information access issues.

6. Carrying out of the Net Navigator Role

- Define the detail of a complex enquiry in conjunction with the user.
- Demonstrate knowledge of search logic, search engines and features of the Internet.
- Create and implement a complex search strategy.
- Evaluate websites located in a complex search.
- Review effectiveness of search strategy.
- Use of ICT to set up current awareness and alerting services.

7. Carrying out the Educator Role

- Establish ICT training needs for individuals and groups.
- Select delivery approach which takes account of learner's preferred learning style and is appropriate for learning content.

- Design learning materials and programmes on ICT related topics.
- Evaluate and revise learning materials and programmes on ICT related topics.

Even though the application of ICT tools in the library satisfy the user needs, the library endeavors to offer an accurate and current resources and maintain the security of its computer systems, But the library does not:

a. guarantee the authority or accuracy of any information found in electronic resources; or

b. accept responsibility for any loss arising from the use of, or financial difficulties with, the library's information and communication technology systems (including loss and unauthorised access to user's data).[12]

There is no doubt that the availability of technology and digital media and the creation of the virtual library are going to have profound effect on the future library and the IT professionals in the campuses, it leaves an interesting prospect and challenge.[13]

1.4 PRICE HIKE OF HEALTH SCIENCE RESOURCES

During the last two decades there has been a steady increase in the prices of information resources and health science resources are not an exception to this. As a matter of fact the price of health science journals

continued to rise even more than inflation rate which created problems to the library managers. Since it has become difficult to add new subscriptions to the collection, this affects negatively the purchasing power of medical libraries. With downfall of economy and currency fluctuations, several medical education institutions are experiencing budget cuts. In other words, the library budgets have not kept pace with the increase in price of health science resources.

Many factors affect serials price each year:

- Currency exchange rate
- Increased number of pages and volumes
- Postage and handling charges
- Subscription cancellation and basic inflation
- Cross subscription[14]

The higher cost of journals including electronic journals force the library professionals (on demand of users and faculty) to cancel some of the existing medical journals' subscription. The cancellation of the subscription forces the publishers, in turn, to increase the cost for recovery of expenses. Another reason may be that commercial publishers use their more profitable journals to support less profitable ones and hence the high price for the former. An alternative hypothesis might be that the publishers offer subsidised subscription to individuals that contribute to the price increase for the institutions.

Some long-range possibilities to cope with problems of rise in price of journals are as under:

- Evidence Based Medicine
- Electronic Journals
- Single Article Purchase
- Library Cooperation
- Consortia Approach
- Database Subscription
- Online Open Access[15]

1.5 IMPORTANCE OF CONSORTIA AMONG MEDICAL LIBRARIES

Resource sharing has been one of the fundamental principles for supporting library services, but the object of such sharing has changed over the years. Generally speaking, before the use of computers in libraries, resource sharing meant sharing materials like books and journal articles for interlibrary loan and creating a uniform list of serials. More recently, resource sharing has come to mean sharing computing resources since economies of scale apply. This practice has continued and even expanded to include the sharing of library automation systems and contracts for online databases.[16]

Shared subscription or consortia based subscription to electronic resources through the consortia of libraries on the one hand, permits

successful deployment and desktop access to electronic resources at a highly discounted rates, and on the other hand, it meets with the increasing pressures of diminishing budget and rising cost of journals. The library consortia on the basis of sheer strength of the number of institutions offer healthy business growth opportunities to the electronic publishers and thus attract the best possible price, terms and agreements. The libraries all over the world are forming consortia of all types and at all levels with an aim to take advantage of current electronic network to promote better, faster and cost effective ways of providing electronic resources to the information seekers. Therefore there is a need to form a forum to help the users community in all aspects and to provide a better platform is the basic concept of consortia.

There are three basic functions of the consortia:

- Sharing of physical resources to this end, union catalogues, linking local systems together, inter library loan protocols, etc., are to be considered.
- Provide connections to the Internet and the World Wide Web, including the provision of workstations in some cases.
- Provide access to electronic resources, either by mounting them on a local server or providing access to resources on other platforms[17]

The important issues to be considered for consortia are:

- Hardware and software requirements of each library.
- Annual maintenance fees, if any.
- Interconnecting cost and options (Internet, dedicated telephone lines etc.).
- Staff skills and requirement under the various options.
- Survey of sharing libraries.
- i) Automated systems ii) Inter Library Loan Volumes iii) Size of collections iv) Circulation activity v) Remote database searching activities vi) Telephone systems vii) other network connections viii) whether the vendor would comply with the technical requirements for the projects and at what cost.
- Each library should estimate future cost of hardware, software, vendor changes and personnel.
- A successful consortium should be vibrant, active and agile. e.g., Consortium of FORSA and INDEST
- The consortium as an organisation requires a leader to lead the team consisting of member libraries, publishers and vendors. It needs a committed leader who is ready to take responsibilities. E.g. INDEST consortium

- Adequate staffing is required for training programmes, coordinate with members, institutions, develop website and conduct users meet.

- Most publishers maintain detailed usage statistics for resources offered by them to consortium. Users need to be told what, as an authorised user, they are allowed and what they are not allowed to.

1.5.1 Models of Consortia / Types of Consortia

The following are the international models of consortia in health science libraries: [18]

1. South Australian human services libraries consortium operates on the principle of equality in the decision making and cost sharing between health libraries, irrespective of their size. In this model, libraries pay only for those resources they want rather than for an entire collection that may not be relevant to their client.

2. The surveys undertaken by Bournemouth University Library and Information Services, for a British Library research innovation centre library and information on purchasing consortia in higher education, further education, public and health libraries. It describes the models of operation of purchasing consortia and their expenditure patterns and

discusses present and future savings arising from consortia activity and the effects of consortia on periodical suppliers.

3. The establishment of the health web project by twelve health science libraries provides a collaborative means of organising and enhancing access to Internet resources for the international health sciences community. The project is based on the idea that the Internet is common ground for all libraries. The greater Midwest region of the national network of libraries of medicine serves as a co-sponsor. Health web is an information resource that provides access to evaluated and annotated resources via the World Wide Web.

4. St.John's Regional Medical Centre (SJRMC) is in Oxnard, California. This library acts as a resource centre on hospital information and is a member of the Mercy Library Consortium. Cataloging and Periodicals management services are brought in and the other services provided include current awareness, clinical references, general references and online searches using Medline and BRS. Inter library loan systems that are well developed.

5. The World Health Organisation library and health literature services, Geneva coordinate regional libraries and provide leadership and technical advice. The objectives are to provide information services to WHO staff and medical libraries in

member-states. Services to developing countries include MEDLARS searches and photocopies training of medical libraries like Consortium of African Medical Libraries, Regional Network of Health Literature Library and Information Services (HELLIS).

Each consortia model is distinct and has its variations. Libraries by using different models/types of consortia can enhance their efficiency and quality in service to the users.

1.6 PROPOSED RESEARCH / NEED FOR THE STUDY

In this new and challenging era, the health science libraries should function as centres for health information management service, not as a collection of publications and resources. Health professionals engaged in diagnosing and eradicating diseases need health science libraries that perform broad banded as well as diverse information management functions and link individuals to information and to systems and respond to individual needs. In the Indian context the studies carried out were centered on availability of library facilities in medical organisations and they revealed their inadequacies. These inadequacies hinder the provision of health information to all. However, its quality, rather than quantity of information sources and services that makes users successful in getting the required information. Hence there is a dire need to study the availability of library facilities.

Further, the changing dimension of libraries from traditional pattern to automated libraries and moving towards digital/virtual libraries has also

influenced the provision of infrastructure facilities and services in different libraries and medical libraries are no exception to these phenomena. Apart from this the collections of digital resources and consortia approach influence the libraries. It is also pertinent to survey the librarians' opinion towards the application of ICT and network consortia approaches.

It is observed that only a few studies have been conducted in the Indian context to study the information services and facilities in medical libraries. However, attempts at evaluating either the status or ICT initiatives in medical or paramedical institutional libraries in Tamil Nadu have not been noticed in the literature. This paved the way for examining the survey of the libraries, especially in medical, dental and paramedical educational institutions in Tamil Nadu, with special reference to ICT facilities and ICT based services.

1.7 STATEMENT OF THE RESEARCH TITLE

"ICT Facilities and Services in Libraries of Medical Education Institutions in Tamil Nadu: An analytical study"

1.7.1 Explanation of the Concepts

a) ICT Facilities

The term ICT facilities in this study covers the computer facilities available, automation, provision of ICT based infrastructure such as Internet connectivity, bar coding, OPAC, participation in network etc., in the medical libraries of Tamil Nadu.

b) Services

In this study the provision of digital collection development, information technology based services such as CD-ROM search, data base support services, electronic document delivery services, participation in networks and consortia etc have been surveyed and analysed in the medical educational institutions in Tamil Nadu.

c) Libraries

Medical library is an integral part of a medical facility and is established for the purpose of providing professional education and research materials for the hospital and medical staff.

d) Medical Education Institutions

In this study medical education institution comprises of universities, deemed universities and colleges of medical, dental and paramedical education. A total of 275 such institutions were considered for this study, out of which 176 have responded.

e) Tamil Nadu

Tamil Nadu is one of the constituent states of Indian Republic, situated on the south eastern side of the Indian Peninsula. It has an area of 1,30,058 sq.km. Chennai (formerly Madras) is the capital of Tamil Nadu. The official language is Tamil. It has 31 revenue districts. There are about

275 medical, dental and paramedical institutions which include 10 medical universities.

1.8 OBJECTIVES

The major objectives of the study are

1. To trace the growth and development of medical libraries in Tamil Nadu.

2. To survey the resources, manpower, services and infrastructure facilities available in the medical libraries under study.

3. To examine the extent of application of ICT in the libraries under survey.

4. To elicit opinions of medical librarians on the application of ICT in the libraries.

5. To identify constraints, if any, in the application of ICT in the libraries.

6. To examine the possibility of consortia approach among libraries under survey.

1.9 HYPOTHESES

1. The growth and development of medical libraries shows a linear trend.

2. Majority of the libraries attached to medical education institutions are lacking in necessary infrastructure facilities and resources.

3. Majority of the libraries attached to medical education institutions have introduced Information and Communication Technology based information services.

4. The application of Information and Communication Technology in the libraries is not satisfactory.

5. Medical librarians have positive attitude towards Information and Communication Technology applications.

6. Factors like lack of finance, lack of manpower, lack of training etc., hinder the application of Information and Communication Technology in medical libraries under survey.

7. There is a strong association between the opinions of librarians and the consortia approach.

1.10 LIMITATIONS

1. The study covers survey of medical, dental and paramedical institutional libraries established upto 2006 only.

2. The study considers only 176 medical, dental and paramedical institutions, (Appendix B), although there are about 275 such institutions in Tamil Nadu as on September 2008.

1.11 METHODOLOGY

The following methodology has been adapted in this study:

Step 1: Review of Literature

The literature on Information and Communication Technology, collection development, infrastructure facilities and services offered in the libraries has been examined and reviewed, which facilitated the construction of questionnaire.

Step 2: Questionnaire Construction

Based on the review literature, a structured questionnaire has be been designed to collect data from the librarians. The questionnaire covers information in the following sections:

Section I: General Information

Elicits information pertaining to the profile of institution, such as location, year of establishment, etc,

Section II: About the Library

Elicits information pertaining to the profile of library, holdings of the library, services offered, collection development and quantum of users.

Section III: Areas of ICT Applications

This section covers the provision of ICT application in various sections of the library and the provision of database services and products.

Section IV: Purpose of ICT Applications

It covers the librarians opinion on ICT applications.

Section V: Collection Development and Applications

Elicits information on the impact of ICT applications on collection development activities of libraries.

Section VI: Information and Communication Technology Impact on Services

It covers impact on operations and services.

Section VII: Attitude towards ICT Applications

Elicits attitudes of the librarians towards ICT applications.

Section VIII: Reasons for Poor ICT Applications

Identifies the reasons for poor ICT application in libraries under survey

Section IX: Attitude towards Consortia among Medical Libraries

Elicits the librarians attitude towards consortia approach in medical libraries.

Step 3: Pilot Study

A pilot study was conducted with a sample of 50 libraries in and around Chennai from different medical, dental and paramedical institutions. Based on the study and results, the questionnaire was further modified and developed to suit the stated objectives. Accordingly, the revised questionnaire was finally administered among the medical libraries in Tamil Nadu.

Step 4: Administration of the Questionnaire

The revised questionnaire was administered among 241 medical, dental and paramedical institutions all over Tamil Nadu which were established up to 2006. A total of 176 have responded and the response rate is 73%.

Step 5: Observation and Interview Method

Besides collecting data through questionnaire, the investigator visited the library and information centers to observe the extent of ICT facilities. This is followed by the unstructured and informal interview with the librarians of the respective institutions.

Step 6: Data Analysis

The data collected from the questionnaire have been analysed and interpreted to test the hypotheses framed and to fulfill the stated objectives. For this purpose Statistical Package for the Social Sciences (SPSS) software has been used. The statistical analysis techniques such as frequency distribution, percentage analysis, ANOVA, cluster analysis, chi-square test

etc., have been employed depending on the nature of the data collected from the respondents.

1.12 CONSPECTUS

The thesis has been presented in six chapters

Chapter 1 highlights the concept of medical libraries, the need for the proposed research, objectives, hypotheses, limitations and methodology adapted in the study.

Chapter 2 deals with the review of related literature.

Chapter 3 presents a brief note on growth and development of medical education in Tamil Nadu.

Chapter 4 presents the analysis and interpretation of the data collected through questionnaire about the facilities, resources and services and infrastructure facilities.

Chapter 5 provides a summary of findings, observations and suggestions.

Chapter 6 deals with the consortia proposal for the medical education institutions in Tamil Nadu

The thesis concludes with a list of bibliographic references and appendices.

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Chapter 2

Review of Literature

CHAPTER II

REVIEW OF LITERATURE

2.1 INTRODUCTION

The review of literature is an essential component of any research investigation, which gives necessary input to the investigator to frame the research study on the chosen topic. It also enables researchers to identify the limitations in the earlier research studies. In this chapter an attempt has been made to review the literature on medical education and medical libraries. The literatures published in the recent decades have been covered in the review. In order to provide comprehensive conceptualisation, the literature reviewed has been categorised under the following broad headings:

i) Medical Libraries and Training

ii) Library Collection development

iii) Library Manpower development

iv) ICT application in Libraries

v) Library Consortia/Networks

vi) Library standards

vii) Library surveys and Evaluation of Library services

2.2 MEDICAL LIBRARIES AND TRAINING

Mani (2008)[1] observed that the Library-On-The-Go" is a means of taking the library out of its traditional walls and expanding its impact and value. The service has raised the libraries visibility, has promoted various resources, and supports the hospitals education and patient care missions. Implementing "Library-On-The-Go" has brought information directly to users in a manner that is both convenient and effective. Instead of approaching users from the vantage point of "come to the library for assistance," the focus has been changed to "bringing the library to users, where and when needed". Addressing this need has allowed staff to build relationships with key stakeholders in the organisation. Identifying and addressing users' needs are essential if the aim is to provide the best service possible.

The Health science library service experience indicated academic medical center libraries can have a positive impact on their communities by providing health information instruction to public librarians reviewed by Epstein (2003). [2] The success of this project demonstrated by the number of participants, positive course evaluations, increased comfort level with health-related reference questions and increased use of MEDLINE plus and other quality information resources has been a catalyst for continuation of this programming not only for public librarians but also for the public in general.

Kaufman (1999)[3] described the development of health information resources required, for credit course created by the Saint Louis Health Sciences Center Library reference department for the first year medical school

curriculum. Six content areas were developed for inclusion in the syllabus, Electronic resources survival kit, introduction to problem based resources, introduction to literature searching, Medline searching hands on / publishing pearls and pitfalls. A combination of lectures, hands on instruction and active learning techniques were employed in the teaching of this class.

A questionnaire survey undertaken by Earl (1996)[4] at the East Tennessee State University College of Medicine, to investigate the feasibility of establishing library training as a required part of the curriculum for undergraduate students. 123 medical school libraries were surveyed to determine the level of training offered. The need for formal instruction and an analysis of the courses taught at each level of the undergraduate training. Analysis of the 55 responses revealed that 75 per cent offered formal library training, and that 49 per cent required all students to take such courses.

Nagle (1996)[5] insisted that the libraries and librarians must change significantly in what they do in order to meet the challenges of the changing health care environment and the new technological era. Opportunities to strengthen partnerships, evolve new roles, and develop new high impact services in support of the clinical, research, and teaching were discussed. Quality initiatives in the management of health knowledge along with its implications on the profession have been described.

Dimitroff (1995)[6] described the educational services of health sciences librarians. Variables examined included publication journal country, type of article (description, review, or advocacy) target audience of education

services, and subject of article. Librarians were the target audience in 12.8% of the articles, a decrease from the previous study's findings. There was an increase in educational offerings by academic libraries, which sponsored 83.2% of the programs, while hospital libraries sponsorship decreased to 5% of programs reported in the literature. The analysis identified a major need for research related to educational activities in health sciences libraries.

The development and implementation of the medical informatics education programme has been described by Wood and Cogan (1994)[7] training has targeted both the health science library staff and health science library users. As many users have had insufficient experience with computers, the library has to teach the mechanics of accesses and network use and to instruct users regarding applications and database searching.

Roper and Mayfield (1993)[8] noticed that the considerable change is occurring in the health information environment, signaling a need for change in the roles of health information professional and in the knowledge and skills expected of them. This article reports the results of a survey of knowledge and skills in the health information sciences conducted by the Medical Library Association (MLA).

2.3 LIBRARY COLLECTION DEVELOPMENT

The issues of electronic access and use of books and journals in medical libraries were discussed by Harger (2008)[9] Management of electronic resources has become an essential function for medical libraries, which include costs and challenges of shifting collections from print to electronic

materials, collaborative arrangements and cost sharing that may save on the cost of bundled electronic journals, models for pricing electronic journals, development of electronic journals and history of pricing, development of open access scholarly publishing and ways open access affects the pricing of subscription journals and the issue of open access publishing and desired relief for library budgets.

Shisler (2007)[10] evaluated nursing collection and stated that collection development policies and space limitations of a library will determine how many historical librarians acquired and which books they might have withdraw.

Amritpal Kaur and Navneet Kaur (2007)[11] explained the need for a good collection of books and periodicals and also a sound collection of reference tools, audiovisual collections and the libraries should provide access to online international databases and also other e- resources.

Burrows (2006)[12] observed that the health science journals were early to offer electronic alternatives to print. As a result, health sciences libraries, their patrons, and the public at large were early to embrace the new versions and continued to embrace the significant changes in scholarly communication. Although the patterns of electronic journals among health sciences libraries and other special and academic libraries have similarities, they also have differences. Broad studies of electronic journals in non-health sciences libraries have been published, but not a retrospective review of electronic journals in health sciences libraries.

Ali (2005)[13] presented a case study to reflect upon the short history and rapid development of electronic journals at the United Arab Emirates University (UAEU). The scope of the journal migration project and its impact on library operations are discussed. The author shows that e-journals have added enormous resources to the collection, improved service, enhanced access to journal literature, increased its usage, and decreased the demand for document delivery of single articles. The author also indicates the challenges of offering e-journals as "bundled" packages and UAEU's concern about the libraries inability to remove irrelevant titles, control cost and retain the freedom to make changes on its journal collection.

Collection development is an important activity of a librarian as observed by Babita (2005).[14] She further indicated that the process of collection development should take into consideration certain important factors like analysis of community users and their needs evolving document selection policies, acquisition of relevant documents, weeding out less relevant or irrelevant documents based on the changing needs of the health universities and periodic evaluation.

The necessary components in the formulation of collection development policy based on both research about collection development policies and data compiled as a result of a survey of 16 centers of higher and technical education in Cuba, as reported by Barbara, Vignau and Grizly (2005).[15] Model for a collection development policy for the system of university libraries was proposed.

Yasuno and Igaku (2005)[16] analysed the collection development in the University of Fukui and Fukui Ika Daigaku (Fukui Medical School).

Anil Singh and Gautam (2004)[17] identified that computer usage has become common place and there has been an increasing number of local efforts in organising indigenous information for individual and institutional utility. Access to information online or in CD-ROM media is now just a matter of money, at the same time access to indigenous information has remained a challenging effort both for the user and the infomediary. A number of abstracting journals, which, in a natural process of migration, are now available in dual formats print as well as machine-readable. In this paper an attempt is made to present an overview of some of the important electronic databases developed in India or on Indian topics.

Uehara (2003)[18] noticed that the centre holds 2 special collections of historical medical books and displays selected items. 3 different Classification systems are used. The library holds 65,530 Japanese and nearly 74,000 Western books, and 758 Japanese and 1324 Western journals. There is 24-hour access. The Collaboration Centre in Japan is well placed to lead future electronic library developments.

Brach (2001)[19] explained the patron access to electronic collections through the Notre Dame Campus network via the Web is seamless.

Chen (2001)[20] analysed both median and the mean to look at the percentage print price increase over five years. It was obvious that print prices for journals with electronic access exceeded journals that did not offer an

electronic option. Combination of print with "free online" access had higher increases from 1996 to 1999, but in 2000, their percentage increases were about the same as print only titles. The rate of price increases for aggregated titles consistently went down over the past five years. Journals with no electronic option showed the lowest percentage rates of print price increase.

Schmidt and Eckerman (2001)[21] described librarians with medical monograph selection. The few short cores collection lists that are available are intended for use in the small hospital or internal medicine department library. As these are the only selection tools available, many academic medical librarians spend considerable time reviewing these collection lists and place heavy emphasis on the acquisition of listed books.

Building of a Web-based e-library may be the most important thing a library ever does as observed by Diane and Angela (2000).[22] An important role for librarians in all types of libraries is the planning and/or building of Web-based e-libraries and also offers a practical discussion of developing and implementing a collection plan for building Web-based e-libraries. The starting point for developing any collection plan is an assessment of the function and need for an information collection and the audience it will serve. Discusses some guidelines and practical strategies on where and how to find, identify, evaluate, and select appropriate Web-based information resources.

A survey on the academic health sciences libraries in the United States and Canada was carried out by Blecic (1999)[23] with regard to collection development trends, including their effect on approval plan and blanket order

use and use of outsourcing over the past four year. Results of the survey indicate that serials market forces, budgetary constraints, and growth in electronic resources purchasing have resulted in a decline in the acquisition of print items. The decline of print collections suggests that libraries should explore cooperative collection development of print materials to ensure access and preservation. Libraries were also surveyed about their use of outsourcing. Some libraries reported outsourcing cataloging and shelf preparation of books, but none reported using outsourcing for resource selection. The reason given, most often, for outsourcing was that, it resulted in cost savings. As expected, economic factors are driving both collection development and outsourcing practices.

Morse and Lanham (1998)[24] opined that the essence of acquisitions lies in those functions that procure information for the use of library clientele and to see that the information is appropriately paid for. Many library schools do not offer a class in acquisitions and those that do often combine acquisitions with collection development.

A listing of databases available on CD-ROM that may be of interest to health sciences libraries were provided by Micros in Medicine (1993).[25] Most of the information is compiled from CD-ROMs in Print 1992, by Meckler Corporation, with additional information from some of the publishers. The purpose of this list is to group similar products together, so that when there is a need to find CD-ROM database(s) on a certain area, it can serve as a preliminary identification tool. It is not intended to be a buying guide, as no subjective evaluation is included. Since price and site license information can

vary from time to time and are sometimes negotiable, they are not included either.

2.4 LIBRARY MANPOWER DEVELOPMENT

Rokknuzzaman (2007)[26]surveyed five prominent public university libraries in Bangladesh to explore the extent of Human Resource Management (HRM) usually practiced by them. The survey used a combination of structured questionnaire, unstructured interview and observation methods to examine the nature and type of library human resources, their professional categories, management issues including staff selection and recruitment, salaries and wages, job analysis methods, performance evaluation, audit, and promotion etc. supporting Human Resource Development (HRD) programmes.

The increasingly global sourcing of IT work and other socio-economic trends prompting fundamental changes in the availability of IT skills needed in both client and vendor organisation have been analysed by Bullen (2007)[27] The results of a survey conducted in 2005, in which IT executives were asked to described the skills they felt were critical to keep in house now and in 2008. The top ten current skills included three in project management, five in business domain and three in technical. In 2008, the top five emerging skills are almost all business domain while the top five exiting skills are all technical. The findings indicate that the critical skills to keep in-house skills are primarily client-facing skills, even when they are technical. Findings indicate that IT professionals need to have a balance that demonstrates a

foundation in the traditional "hard skills" and experience with "softer" business-oriented skills.

Kannappanavar and Kumbargoundar (2005)[28] analysed the management skills in the light of ICT among library and information science professionals in Agricultural Universities in India.

The skills required by the library and information science professionals in the 21st Century in the context of ICT implications are discussed by Rajalakshmi (2004)[29]

The results of a study of training opportunities for library and information professionals in India have been presented by Nyamboga (2004).[30] The need for training students, researchers and staff to make appropriate use of resources made available in libraries has been suggested. Library and information professionals also need continuing professional development courses as new ways of providing information resources are developed.

Kibet Bii and Wanyama (2001)[31] examined the impact of automation on job satisfaction among library staff of the Margaret Thatcher Library (MTL), MOI University, Kenya. With the exception of the university librarian, deputy and the systems librarian who were interviewed face to face, questionnaires were distributed to all other library staff. It was established that there were myriad problems within the library regarding training and access to automated systems of interest.

Abimbola (1997)[32] reports on a survey conducted to investigate the level of motivation among librarians and para-professional staff in Nigerian university libraries using the questionnaire method. Major variables considered were training opportunities, frequency of development, work environment, promotion prospects, sabbatical leave, and communication and management style. All the respondents agreed with the frequency of development of staff in their respective libraries and suggested some practical ways of motivating staff. Chief among these is the management style of university librarians going out to see for themselves what is going on in the various sections of the libraries.

Osei (1996)[33] observed that staff development, undoubtedly, effectively enhances staff performance and job effectiveness, and the climate of interpersonal relations in an organisation. The need for professional staff development in an academic library and the state -of- the -art of professional staff development at the University of Science and Technology Library, Kumasi, Ghana, has been focused.

The issues relating to professional development and manpower training in Kenya were discussed by Dennis (1995)[34] provide background information on libraries and information sciences training programmes situation. Gives attention to issues and trends affecting information profession in training, curricula development, application of information technology, cost of information materials and the crisis in supply and demand within regard to manpower development in the information profession. Suggests that institutions for training information professionals need to observe the supply

and demand trends in their environment and to adjust both the curricula and intake of trainees to the national situation. The training institutions also need to broaden the courses offered in their programmes to include computer skills, communication studies, economics of information, marketing, research methodologies, management, publishing and book trade, resource sharing and continuing education.

Abromitis (1993)[35] observed that Staff Development Committee (SDC) was convened to implement staff development opportunities for an academic health sciences library system comprised of three separate facilities. The responsibilities of the SDC are to: (1) Develop programmes to enhance workplace skills and personal growth, (2) Communicate the availability of existing programmes at the university and medical center, and (3) Encourage the staff to participate in these opportunities programme. The committee created goals and objectives and developed a survey designed to give staff the opportunity to provide input for this initiative. With an 80 per cent response rate, the survey results were used to plan 15 events based on staff needs and preferences. First-year attendance for SDC sponsored events was 459 and Committee members served as liaisons for each event. Two forms were developed to facilitate event planning namely a monthly announcement sheet and email reminders.

2.5 ICT APPLICATIONS IN LIBRARIES

Sharma and Yogesh Kumar Jain (2006)[36] observed that the information technology changing the shape and functions of medical college libraries, the

traditional methods are being reshaped by the introduction technology in the process of transformation of medical information. The evolution from traditional retrieving of written work to the retrieving of electronically stored information has made an impact on the medical college libraries.

Nikolaidou (2005)[37]observed that digital library facilitates access to medical materials produced by laboratories for both research and educational purposes. As the material produced varies (regarding its type and structure) and the search requirements imposed by potential users differ, each laboratory develops its own collection. All collections must be bilingual, supporting both Greek and English. Extended requirements were imposed regarding the services offered by the digital library environment, due to the following reasons: end-users actively participate in the cataloguing workflow, cataloguers should be able to create and manage multiple collections in a simplified manner and different search requirements must be supported for different user groups. To formulate and then deal with these requirements, the author introduced the term "dynamic collection management" denoting automated collection definition and unified collection management within an integrated digital library environment.

Jackson (2004)[38] examined the usage of net library. Since net library is a web-used product, a subscribing library user has access to the collection twenty four hours a day, seven days a week from any computer with an Internet connection.

Ramesh Babu and Tamizhchelvan (2003)[39] examined features provided in online public access catalogues (OPACs) in Tamil Nadu. OPACs are recent developments in libraries in India in general and Tamil Nadu in particular. The major findings of the survey reveal emerging trends in OPACs.

Jones (2003)[40] stressed the importance of information technology literacy for the professionals working in library and information centers.

Ian (2002)[41] observed that the digital libraries are a key technology for developing countries. It can assist human development by providing a non-commercial mechanism for distributing humanitarian information on topics such as health, agriculture, nutrition, hygiene, sanitation and water supply. Many other areas, ranging from disaster relief to medical education also benefit from new methods of information distribution. Outlines a broad range of issues and then goes on to describe how a freely available digital library system called "Greenstone" provides a flexible tool that helps meet some of these needs. Being "open source" software, Greenstone can be shaped by its users to meet new requirements.

Prathiba Naran (2001)[42] has out lined the skills of the librarians, which make them suitable for a variety of positions in the diverse carriers such as software field, database and information area, publishing trade and outsourcing opportunities.

Ann Applebee (2000)[43] reported on the first-ever nationwide quantitative survey of academic staff use of the internet. After briefly noting reasons for adopting a mailed-out survey, the article discusses some of the

results obtained. These include daily use of e-mail, access to the Internet via remote dial-in services and technical support provided to academics. More than one-third of respondents are in need of more training in Net use and time limitations and lack of training are typical barriers for effective use. The study concludes with opportunities for further research at both national and international levels and discusses possible implications for university administrators

In the study conducted by Ramesh Babu and Subramanian (2000)[44] on the library staff attitude working in the self financing engineering educational institutions in Tamil Nadu, towards the application of IT, felt that given the facilities such as trained staff and finance, the staff are willing to go for IT in the libraries.

The status and use of the Internet in university libraries of Pakistan were surveyed by Hamid Saeed (2000).[45] A questionnaire was distributed among the university libraries The data derived from this study indicated that half the university libraries in Pakistan have access to the Internet and it has become an essential part of library services. The Internet is also being heavily used for performing various library functions such as reference work, classification and cataloguing, document delivery service, subscription to online journals, etc. The study also discussed the problems that prevent wider use of the Internet in the higher educational institutions of Pakistan.

Kasirao (2000)[46] outlined the development of information technology, which has been acquired from developed countries and their use in India is

currently dominating. He also studied the areas of IT applications, collection development policy, manpower development and attitudes of staff towards IT applications working in the special libraries.

Hristovski (1999)[47] described the development of the Central Medical Library website at the medical faculty of Ljubljana, Slovenia. The aim of the website is to serve as a guide to the library resources and services. The website is built with a uniform graphic design and a menu driven structure. The structure partitions information space by providing meaningful subject categories that enable efficient exploring by browsing. Because the categories are limited in their granularity, a search engine based on the Harvest system is included. An evaluation of website access was carried out by analyzing and exploring the web server log files using data warehousing and OLAP (On-Line Analytical Processing) technology. Finally some possibilities for future development of the website are suggested.

Chandran and Ramesh Babu (1999)[48] surveyed the library staff of academic and professional colleges in Tirupati (Andhra Pradesh) in the use of IT and identified that there exists an emerging interest among the library staff towards opting for automating library services.

Another study conducted by Ramesh Babu and Parameswaran (1999)[49] on the attitude of public library staff in the city of Chennai (Madras), it was found that although staff is in favour of IT, they expressed that they are not given adequate facilities and necessary training to opt for IT.

A detailed review of the current state and future prospects of 19 university libraries in 12 countries of Africa was made by Diana (1998)[50] and IT implications for practitioners and researchers are discussed. IT will not reduce the need for hard copy books and journals. Its biggest potential is in providing links to the outside world and in increasing intra-African exchange and communication.

Besson (1997)[51] opines that the Z39.50 protocol is quickly finding its place in many library systems. Libraries have the opportunity to link applications in ways hitherto not possible. In Bartholomew's and the Royal London School of Medicine and Dentistry runs two applications with Z39.50 capabilities on a TCP/IP based WAN spanning four sites: SIRSI's Unicorn (the School Library's automation system) and Ovid (Medline and full-text databases). Access to Unicorn is available to anyone with connection, and web version (SIRSI's Web Cat) will be implemented shortly. Ovid is available on the school sites in both Windows client-server version and through Ovid's Web gateway.

The impact of CD-ROM on reference information services in Ghanaian libraries has been assessed by Mary (1996)[52] through a questionnaire, which was sent to ten selected libraries. The results reveal to what end CD-ROM is being used, to what extent and to what advantage and disadvantage. Although CD-ROM appears to be beneficial to reference services, it also highlights various problems in information services in general. Also notes the problem of limited user access to CD-ROM facilities owing to over protectiveness and lack of staff training.

Access to Internet resources and communications has increasingly become a necessity in many hospitals nationally and as observed by Fuller (1995).[53] The results of a Pacific Northwest pilot Internet connections project provide important evidence of the value of librarians in establishing such connections in their institutions. The pilot project has resulted in a wealth of information regarding approaches to promote the utility of the Internet to health professionals in hospitals. Roles that librarians are playing in support of such connections include facilitator, negotiator, provider, publisher, integrator, and educator.

The results of surveys carried out in 1991 and 1992 by Tillman and Ladner (1994)[54] to determine if special librarians working in colleges and universities differ from special librarians in corporations, non-profit organisations and government agencies in their use of the Internet and training issues. Focuses on how special librarians learn about the internet, access and pay for the Internet, are trained, gain employer support, provide training, use of the Internet and express training needs.

Braude and Samuel (1993)[55] stated that Information Technology is transforming the nature of health sciences information and its management, thereby altering the traditional responsibilities of health sciences librarians. As a result, the traditional educational preparation for librarianship is no longer entirely relevant, and there is a real possibility that information management will be taken over by individuals with different educational backgrounds and skills. This paper explores four topics relevant to this issue: the emergence of new forms of health sciences information, the impact of

technology on the practice of health sciences librarianship, the interaction of technology and the practice of health sciences librarianship, and the relationship among these three topics and the educational preparation of health sciences librarians.

A survey was carried out by Kumar (1993)[56] on the usage of modern technologies in health sciences libraries such as photocopiers, microfilming, computers, facsimile transmission, audiovisual, online searching and CD-ROM through a questionnaire. Personal visits were made to a number of libraries and some of the librarians were also interviewed. This paper examines the impact of modern technologies on medical libraries, and concludes with the problems faced by the librarians in adopting the modern technologies and suggests the need and measures for implementation of modern technologies to health science libraries.

Kaliyaperumal and Thandavamoorthy (1993)[57] discussed the usage of modern technologies in the health care libraries in Madras (now Chennai) and also identified the problems in adopting modern technologies.

The use of satellite communication system and improvement in the flexibility related to interaction among software, computers, and databases combined with remote inexpensive planning to enhance and facilitate the smooth flow of information, were narrated by Kootchar (1990).[58]

2.6 LIBRARY CONSORTIA/NETWORKS

Networking of libraries in Puducherry namely PUDULIBNET has been proposed, based on the survey of 48 libraries in Puducherry region by Nagalingam (2008).[59] The network covers academic, special and public libraries for which the nodal centre is Pondicherry University Library. The major objective of network is to provide maximum access to holdings of libraries and their collection to all the participating libraries.

A survey of consortia initiatives in engineering educational institutions in Tamil Nadu was conducted by Ramesh Babu, Vinayagamoorthy and Gopalakrishnan (2007).[60] The survey considers measuring consortia awareness and the attitude of library professionals in engineering educational institutions towards joining consortia. Based on the results of the survey model consortia proposed for the engineering educational institutions in Tamil Nadu.

Ramesh Babu, and Asok Kumar (2007)[61] proposed a networking of public libraries in India namely PUBLIBNET, where in the State Central Library and District Central Libraries shall be linked through NICNET in order to enhance the use of resources among the public libraries. The authors designed a model which can be implemented in a phased manner and provided the output screen models of the proposed PUBLIBNET.

Conghui and Xiaochun (2006)[62] described the current status of Open Access (OA) in China, including problems and possible solutions and introduced the role of the academic library in OA. They also indicated several

successful OA projects with a focus on the user requirements and the role of the academic library.

Narayanasami, Krishnamoorthy and Jayamai (2005)[63] opined that the Tamil Nadu Dr. M.G.R. Medical University (www.tnmmu.ac.in) is the largest Medical University in India. TNMMU will establish a Consortium for Virtual Library for wider access within its campus for the benefit of Hospitals, Medical Research Institutions and all 200 + Medical and Paramedical colleges in Tamil Nadu under its application. This paper briefly describes the role of consortia for the Tamil Nadu Dr. M.G.R. Medical University Virtual Library (TVLC). The TVLC aims to bring about a digital library culture and encourage the usage of e-resources (e-journals, e-books, e-tutorials) and promote resources sharing among Medical, Dental, and Pharmacy, Nursing, Indian Medicine and Physiotherapy colleges in Tamil Nadu. Also discusses different aspects of consortia including the membership, subscription, funds, beneficiaries, rights and responsibilities, role of aggregator, back-issues and archiving rights, usage, authorisation, licensing, secure network, training, IT infrastructure, sustained continuity, implementation and evaluation.

Resource sharing through consortia is necessary for medical libraries to improve library and information services for medical professionals as pointed out by Raj Kumar (2005).[64] In the present environment, many medical libraries face financial constraints, prohibitive price of books and journals, tremendous growth of biomedical literature and ever increasing demands of the users. With the emergence of information technologies, resource sharing has become extremely feasible and beneficial. It is cost effective and fulfills

users' needs in a better way and transcends geographical barriers. The author depicts the concept of library consortia, its merits and demerits and future prospects in the context of Indian health science libraries.

Vyas and Joshi (2005)[65] surveyed 14 government medical colleges and 3 government dental colleges under the Directorate of Medical Education and Research (DMER), Mumbai. The study proposed consortia model. As a first phase all government medical and dental college consortia will be formed by DMER. In the second phase this consortia may be extended by the Maharashtra University of Health Science, Nashik (MUHS Nashik) for all private medical and dental colleges and in third stage for all Homeopathy, Ayurvedic and Unani Health Science Libraries affiliated to this university. Government medical and dental colleges in Maharashtra are the primary beneficiaries of consortium. The average number of foreign journals subscribed by 14 government medical college libraries are not more than 100 and in government dental colleges they are not more than 50. Internet access infrastructure is inadequate in majority of the colleges. For development of the consortium at state level, the fundamental and basic help may be taken from Rajiv Gandhi University of Health Sciences Karnataka HELINET consortium because it is the first health science consortium in India.

The status of information and communication technologies usage in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information products and services were analysed by Gulati (2004).[66] This paper highlights the consortia efforts in India like JCCC Consortium, INDEST Consortium, CSIR e-journal

Consortia, and UGC Infonet. It further discusses digitization efforts in India at NISCAIR, New Delhi, IIITM Kerala, C-DAC Pune, and the Digital Library of India. The paper concludes with challenges for library and information science professionals and an overview of initiatives taken by the Government of India.

A networking of Sanskrit Vidyapeetha libraries in India namely SANSLIBNET has been proposed based on information needs and information seeking behaviour of Sanskrit faculty by Gopal Reddy (2004).[67] The major objectives of SANSLIBNET are to share resources among the Sanskrit Vidyapeeth libraries, to develop common collection development policy and to extend the information services through remote login and access facilities.

Gopalakrishnan (2003)[68] has proposed a networking of National Institutes of Fashion Technology (NIFT) in India based on information seeking pattern by the NIFT faculty. This networking model has been named as NIFTNET covering seven NIFT resource centers in India. The author has proposed the implementation of NIFTNET model to augment in phased manner and suggested suitable software and hardware requirements. The prototype NIFTNET model has been presented with output screens.

Public library consortia in India has been proposed by Ramesh Babu, and Asok Kumar (2003)[69] to share physical resources and access to e-resources in the context of public libraries in India. The authors have also identified the constraints in developing consortia approach to public libraries

in India such as, lack of automation in public libraries, attitude of library staff, and lack of trained staff in ICT application, political and legal barriers and economic constraints.

According to Pandian (2002)[70] the information environment today is very much conducive enough to tackle the problems faced earlier. With the advent of the Internet and World Wide Web it is possible to provide instantaneous access to the source available not only with in the organisation, but also other institutions that participate in the consortia programme. This provides a framework for the design and development of an intranet model based on a consortia approach, that facilitates information access and use by providing a single Web-enabled window to the information users of the participating institutions in the consortia programme not only to their resources but sources in the other institutions as well.

Individual libraries in the islands of the Pacific are notoriously viewed as resource poor by Arlene (2002).[71] If the resources of each library are viewed collectively, there is a wealth of materials ready to be shared. This paper discusses the growing use of technology, such as document scanners, telecommunications capabilities and electronic document delivery using the internet, to drastically reduce the time to deliver documents and the costs for this service. It also discusses low-technology projects fostering resource sharing throughout the region and directions for future growth.

Soviet medical libraries underwent a re-organisation resource in the creation of SOYUZMED INFORM consortium headed by the Russian State

Central Scientific Medical Library in Moscow, as stated by Dimitroff (2000).[72]

The development of model licenses for use in the procurement of electronic journals as a necessary part of streamlining an unfamiliar and burdensome process has been outlined by John (2000).[73] Copyright law is inadequate to deal with the scope and accessibility of online journals, the interests of journal owners, or the specific needs of the serials community. Model licenses are now in the public domain for use as part of the process for negotiating the purchase of electronic journal content for individual libraries and for consortia. These model licenses can help reduce the negotiation and administration for both publishers and librarians.

The impact of information technology in information management and the major activities to be considered for improving information accessibility in India, including database production and publication by employing centralisd input and centralized processing and decentralized input and centralized processing, and utilization of existing international databases by way of leasing or through online access were outlined by Subba Rao (2000).[74] He described the Indian scenario and information availability with various departments/agencies for database production. Further this paper lists the Indian database service providers with their services from government and corporate agencies. It has also mentioned that the database sector is growing very fast in spite of some factors hindering its growth. The industry is still in the nascent stage even though providers are rushing to provide information.

Kaul (1999)[75] traced the development of the Delhi Library Network (DELNET) and its various services. DELNET is a growing resource sharing service in the Delhi region, offering a range of products and services to facilitate the exchange of information among libraries.

Camile (1993)[76] described the Management Information System (MIS) that provided a means for collecting, reporting, and analyzing data from all segments of an organisation. Such system is common in business but rare in libraries. The Houston Academy of Medicine-Texas Medical Center Library developed an MIS that operates on a system of networked IBM PCs and paradox, a commercial data base package. The data collected in the system included monthly reports, client profile information, and data collected at time of service request. The MIS assists with enforcement of library polices, ensures that correct information is recorded and provides reports for library managers. It also can be used to help answer a variety of ad hoc questions.

Pigon (1990)[77] described the Central Medical Library (CML), Poland, along with the development of its own collections, undertook to shape the collections of other medical libraries and improve information exchange. At the end of the 1970s it was able to contribute to the organisation of the National System of Scientific, Technical and organizational information (SINTO) and was consequently given the function of a central medical library in the Information System on Public Health Protection, one of the component branches sub-systems of SINTO. He describes the role of CML in branch network of medical libraries, problems of collection development and documentation and increased access to collections, research and development.

2.7 LIBRARY STANDARDS

Prema and Palani (2005)[78] stated that the medical library plays an important role in the hospitals. The hospital library standards are as a guideline to be used in facing the challenges. Standards for health sciences have been developed as a guide for not only to hospital administrators but also to librarians and accrediting bodies to ensure that hospitals have the resources and services to effectively meet their needs for knowledge-based information. Medical Council of India has also formulated minimum standard requirements for the medical college libraries in India. But these standards are not covering most of the important areas like, library budget, qualifications and continuing education of library staff, requirements for a library advisory committee, selection and evaluation of library resources and services, library facilities, resource sharing, information technology applications etc., which are essential for effective library management.

Sudhakara Rao (2005)[79] observed that the health science libraries are considered to be the backbone in medical education. Therefore these libraries are to be established and developed with high standards by providing funds and expertise to meet the information thrust of health science professionals. National and international agencies/ associations/ institutions are developing and monitoring the standards and guidelines for health science libraries. The author further discusses the handicaps in the standards/ guidelines of MCI for medical college libraries and suggested necessary modifications for betterment to upgrade the health science libraries to meet the present and future information requirements of health professionals.

Seetharama and Ambuja (2004)[80] stressed the need for MCI norms for medical college libraries and suggest the medical colleges adhere by the norms.

Nagalingam and Sudhakar Rao (2004)[81] discussed the standards of Medical Library Association (U.S.A) and Medical Council of India (M.C.I) for health science libraries.

"Standards for Hospital Libraries 2002" have been developed by Rand (2002)[82] as a guide for hospital administrators, librarians and accrediting bodies to ensure that hospitals have the resources and services to effectively meet their needs for knowledge-based information. In addition, the standards address the development and implementation of the knowledge-based information needs assessment and plan the promotion and publicity of the knowledge-based information services, and the physical space and staffing requirements. The Hospital Library Standards Committee has developed this document as a guideline to be used in facing these challenges.

Judith (2000)[83] outlined the minimum levels of staffing, services, budget and technology that should be provided by a library specialising in Vision Science. As amount of print and electronic information available to vision science patron's increases, the role of the library as the gateway to this knowledge becomes more important. The Association for Vision Science Librarians expects that adherence to these standards will help the individual vision science library fill this gateway role to the fullest extent possible.

Mariappan (1994)[84] suggested that the improved standards must be implemented with special reference to the norms of Medical Council of India, New Delhi in the area of buildings, collection development, finance, manpower and staff formula.

Seetharama (1994)[85] discussed the helpfulness of performance standards applicable to medical libraries and also provided a performance standards based on certain assumptions for automated libraries.

2.8 LIBRARY SURVEYS AND EVALUATION OF LIBRARY SERVICES

Ahmad and David (2007)[86] outlined the current health library/information environment in Saudi Arabia, and tried to identify problems, issues and areas for improvement, to make recommendations for improvement and to instantiate these in models and prototypes. A mixed method empirical approach has been used in 11 health libraries, including literature survey, institutional profiling, questionnaire, interviews, non-participant observation and examination of documents. A model for supporting change management in Saudi health libraries is proposed and a prototype for a Saudi Health Information Network is developed. Problems and issues are identified such as use of information communication technologies and digital resources, lack of proactive information services, education, training and continuing professional development for health library work, limited strategic planning and policy for these services. Practical implications and recommendations are made to enable the government of

Saudi Arabia and its various agencies to support improvements in the existing health sciences libraries and information provision.

Asemi and Riyahiniya (2007)[87] investigated the relationships between awareness and use of digital resources among students in Isfahan University of Medical Sciences. A total of 250 students were selected randomly as a sample. The results were that 70 percent of students were aware of digital resources. Students had less use of offline databases attributed to factors such as infrequent periodic orientation and lack of education on use of offline databases and fewer terminals connected to the server in the Central Library. Users are faced with problems like low speed connectivity and shortage of hardware facilities.

The reference usage statistics in an academic health science library has been analysed by De Groote, Hitchcock and McGowan (2007).[88] that traditional reference remains the core of information services in health science library.

Lacrox and Collins (2007)[89] surveyed the inter library loan facilities available in US and Canadian health sciences libraries and recommended that there should be a co-operation among the libraries in order to save money on expensive foreign journals.

Maggio (2007)[90] conducted a survey on the use of reference and information services. The findings revealed that a rich and verses text that introduces the general concept of reference serves as a useful guide to

reference materials and provides an overview of the current state of reference and the potential for future direction.

The current sources of revenue were surveyed by Blessings (2005)[91] for Nigerian libraries and offer suggestions for alternative funding. Nigerian libraries are depends mainly on annual budget allocations from the government. Funds for Nigerian library and information services are traditionally derived from a parent institution. These revenues vary from a fixed percentage of an institution's overall budget to an adhoc arrangement. Most libraries receive far less funding than the percentage that is usually earmarked for them.

Prakasha (2005)[92] noticed that the medical libraries in colleges are working as reference libraries with opening hours of more than 14 hours a day. The print collection, e-resources, circulation, reference service, collection development (both digital and print), user services, library automation, institution repository, on self guideline of users, include non-technical library staff and document maintenances is taken in to consideration.

Tridib Chattopadhyay and Biplab Chakrabarti (2005)[93] surveyed the health science libraries in Kolkata city. They noticed the various types of users in these health science libraries viz., students, teachers, research scholars, doctors, nurses, hospital employees (both indoor and outdoor) have been covered in this study. Moreover, for the sake of the development of the common people, the libraries are taking massive programmes which will be

implemented in the near future. All the present problems and future prospects of these health science libraries have been discussed vividly.

Khalid Mahmood and Syed (2005)[94] identified that library services could be provided on a fee-based model in Pakistan. Surveyed experts in Pakistani libraries to determine both the types of library services that could generate revenue and the viability of charging for library services. Out of 32 identified information services, 12 were identified as excellent candidates for the fee-based model. Another 16 were identified as having a better than 50 percent chance of success. Identifies a minimum of 28 library services that may generate funds for Pakistani libraries if they are changed to a fee-based model.

A survey, describing the ILL borrowing practices of Israeli college libraries in general and, in particular, those of libraries that send the majority of their requests to universities, was conducted by Lynne (2004).[95] It also identified the disciplines of college library ILL requests and determined that there is a connection to the disciplines prevalent in their own collections. In addition, it identified the Israeli university libraries that received increased requests between 1997 and 2001 and assessed that the effects on them are identified the changes implemented in interlibrary loan departments in order to deal with the increased demand.

Ramesha, Ramesh Babu and Kumbar (2004)[96] narrated the evaluation studies on medical libraries and the need and purpose of evaluation of health science resources and services are highlighted. A brief review of literature on

the strategy for measurement and evaluation of health science resources and services in the changing ICT environment are presented. The study further identified some of the measurement frame work questions, which can be used in planning, internal decision making and communicating with top management for the betterment of services and resources.

Many a times people find difficult to reach the traditional knowledge due to the fact that they are unreached, physically and culturally. But this traditional knowledge also has an unparallel knowledge on various aspects of life. Naturopathy is one among such knowledge hidden with the folk. A study by Ramesh Babu, Gopalakrishnan and Tamizhchelvan (2004)[97] makes an attempt in exploring the hidden communication and to elicit the information from the folk to design and develop a database on "Folk Wisdom". This case study explored the unrecorded rich folk mines in naturopathy in the villages, hamlets and settlements in Andhra Pradesh.

Wallace (2004)[98] evaluated the impact in the health care literature of research articles that provided evidence of the value of library services (including MEDLINE) as an element of quality health care and data sources and selection.

Kyoto University Medical Library is one of 50 libraries in Japan. In the last 3 years there have been many new developments including new services available from the library home page, user education for electronic journals and database services, new information sources and longer opening hours.

The library was built in 1965 and plans are being made for a replacement, as surveyed by Kitagawa (2003).[99]

The contemporary university library system in Iran was analysed by Mohammed (2003).[100] The eight key factors studied are: library systems, resources and collection building, technical processing, services, information technology applications, co-operation and exchange of information resources, administration and staffing, and financial administration. While examining these variables, the problems being faced by university libraries are also discussed and suggestions for dealing with them are offered.

Nisimukai (2002)[101] examined the electronic library services at Health Science University of Hokkaido Library, Japan. The institute has an Internet web server and consists of a web OPAC, CD-ROM data bases and Internet access. Access to the service is possible through various routes including a wireless local area network (LAN).

Japanese and Chinese medical school libraries and users were surveyed on availability and use of web pages by Zhou (2002).[102] Questionnaires were returned by 129 libraries, 111 of which had web pages, and 240 users. Over 80 per cent of Japanese and 60-80 per cent of Chinese libraries provide access to basic services through their web pages. However, few Libraries offer document delivery service with OPAC connection, notation of linked sites or reference question forms. Web pages should be provided an all-round guide to traditional and web-based library.

Qureshi, and Naqvi (2001)[103] narrated that in developing countries such as Pakistan, academicians and researchers face problems in accessing information due to poor infrastructure or lack of library facilities for research in medical institutions. Health professionals are keen to know the latest information and state- of- the- art technology on various topics like advanced methods of treatment or latest strategies on hospital management and non-clinical health imperatives.

The reference librarians at the Health Science Library, Buffalo University, New York, decided that changes needed to be made in the pattern of information question made by library users at the reference desk and held a planning retreat as reported by Gray (2001).[104] The librarians considered current trends in reference service in other academic libraries, the specific needs of the users of the health science library and the strengths and expertise of the library staff. The results of the structured discussion produced ideas for redefining reference service to provide customised services for the clients and the environment.

The quality and usefulness of the mediated computer search service at the health science library, Memorial University of Newfoundland was surveyed by Barnett and Morgan (2001).[105] Satisfaction rates were found to be high, with users indicating librarian expertise and time and cost savings as the main reasons for using the service. Non-users indicated that they preferred to do their own searching and many were unaware of the service. Though a majority of respondents do not currently use the service, surprisingly a

majority of respondents placed significant value on the mediated search service in relation to instruction.

Al-Ansari and Al-Enezi (2001)[106] examined the current status of health sciences libraries in Kuwait in terms of their staff, collections and facilities, use of information technology, information services, and cooperation. Seventeen libraries participated in the study. Results show that the majority of health sciences libraries were established during the 1980s. Their collections are relatively small. The majority of their staff are non-professionals. The majority of libraries provides only basic services and also indicated that a significant number of health sciences libraries are not automated. Some recommendations for the improvement of existing resources, facilities and services are made.

Vida (2001)[107] felt that interlibrary loan and document delivery are important elements of any library system. Interlending among the countries in former Yugoslavia and after the dissolution is very much influenced by political and economical background of the state.

Hollander (2000)[108] surveyed 148 publicly and privately supported academic health sciences libraries affiliated with the Association of American Medical Colleges (AAMC) accredited medical schools in the United States and Canada to determine level of access and services provided to the general public. For purposes of this study, "general public" was defined as nonaffiliated students or health care professionals, attorneys and other no health-related professionals, patients from affiliated or other hospitals or

clinics, and general consumers. Results showed 98% of publicly supported libraries and 88% of privately supported libraries provided access to some or all of the general public. Publicly supported libraries saw greater numbers of public patrons, often provided more services, and were more likely to circulate materials from their collections than were privately supported libraries.

Mei-yu (2000)[109] examined the development of incoming international document delivery services (incoming IDDS) in Taiwan, Evidently there are space for libraries and brokers to grow, since the level of potential users' awareness is low and the current incoming IDDS cannot totally meet potential users' requirements of speeds and fees. The players most likely to be successful in expanding the market will be those with efficient services to meet the current and potential users' expectations and marketing strategies designed to attract new users

The computer technology in libraries has revolutionised the concept of rapid and accurate information services. In Pakistan, though, computer technology is new and is being successfully introduced in all types of libraries and information centers. Mahmood and Ajmal Khan (1999)[110] reviewed the literature on the use of computers in Pakistan's libraries. The literature includes monographs, journal articles, reports, etc. published inside and outside Pakistan, discussing information technology, specific library applications, the activities of individual libraries and automation education. The need for library automation and the problems faced by Pakistani professionals in this respect are also discussed.

The status of hospital libraries, their sponsoring organisations, their staff and the academic qualifications of the head of the library, collection size, available space, buildings and services were examined by Al-Ogla (1998).[111] The study was limited to the hospitals with libraries in Riyadh, the capital of Saudi Arabia. The data were collected through questionnaires sent to a sample of fifteen hospitals with medical libraries. This is the first study of its kind covering the whole Kingdom.

Alessandro (1998)[112] observed the Digital Health Science Library (DHSL) evaluation involves studying the usage of the DHSL by individuals as well as the population. The aim was to evaluate trends in overall usage of a DHSL, as part of process of continuous quality improvement in order to learn how to enhance a DHSL in order to meet its user needs better. He also suggested that to be of optimal assistance to users, DHSL should contain a broad base of information on common and uncommon medical problems, accommodate the needs of the significant percentage of users that are international through content translation and mirroring, and ensure they are indexed and catalogued in the major web search engines and web general and medical indices so that they can be easily found by users.

At the Medical Library at Women's College Hospital, Toronto, Rashid and Burns (1998)[113] carried out a user survey that posed choices about priorities among services. The conclusions drawn from the survey and its related planning process may help similar organisations design an appropriate service blend for future users.

Macias-Chapula (1995)[114] studied the existing situation of ninety-two hospital libraries located at Mexico's Social Security Institute (IMSS). A descriptive systems approach was used to explore the physical structure and space of the libraries, staff, furniture, equipment, collection, services, organisation and management, and users. Structured interviews were applied to each hospital library, and a questionnaire was used as a tool to collect data. A "control" system, designed to measure the status of each library, was applied through the assignment of values to several indicators, derived from IMSS policy manuals. This procedure helped to identify which library was "more" or "less" adequate to IMSS standards. Within the rank of 10 to 1 (10=optimum; 1=minimum), the mean rank of IMSS hospital libraries was 6. The major deficiencies found were those related to furniture (ranked 4) and services (ranked 5) and the lack of library professionals found in 92% of the libraries.

Wakeley and Patricia (1993)[115] reported the survey of all U.S. registered hospitals in 1990. The response rate was 57%. Results showed that 2,167 hospitals (31.6%) of all U.S. registered hospitals had on-site libraries that met four definitional criteria. Survey results also indicated that hospitals use diverse resources and approaches to provide information services to a wide array of health care providers and consumers. These baseline data, combined with an assessment of key environmental factors affecting hospitals, can provide guidance to hospital libraries as they face the challenges of the 1990s.

The growth and development of health science libraries in India has been traced by Walia (1993).[116] The survey was carried out to study the prevailing situation regarding library buildings, finance, collection, library staff, organization of documents and services provided by health science libraries in Chandigarh .Data was collected in the form of a questionnaire. Personal visits were also made to different types of health science libraries.

Holst (1991)[117] focuses on the proliferation of hospital libraries since World War II has created a generation of librarians who take for granted the existence of libraries in hospitals. A literature review for the first half of the twentieth century presents a picture of uncertainty and struggle for identity for the hospital library. Then as now, hospital libraries reflect the institutions within which they operate. A brief history of the development of the American hospital provides a context for describing the various roles of the hospital library.

Stevens (1990)[118] attempted to determine how efforts to contain the soaring cost of U.S. health care in the 1980s have affected the size and stature of Michigan hospital libraries. A questionnaire was sent to 150 hospitals across the state. Fifteen of the 97 responding institutions did not maintain libraries during the survey period and were subsequently excluded from the study.82 responding libraries decreased by 6.1%.In the 69 libraries reporting budget data, materials budget increased, but by less than 7% a year. Eighteen of the 82 libraries had positions reclassified, with 12(14.6%) assigned downgrades. The trend toward reduced size and perceived value of hospital libraries that emerged from the survey points to the need for regular collection

of comprehensive hospital library statistics to assist hospital librarians in effective direction of their professions course.

Olorunsola (1997)[119] stated that the use of information technologies in the provision of information and communication in libraries has had a far-reaching effect on librarians and library users. Points out that the provision of information can be made more effective and efficient with the use of electronic information and examines the extent to which electronic information sources have been used in Nigerian libraries. There is nothing to show a widespread or intensive use of electronic information in Nigerian libraries. Also identified some problems facing the application and use of electronic information sources and offers suggestions to overcome them.

The results of a survey of interlibrary lending operations in Zambia were analysed by Justin and Gertrude (1996)[120] which indicated the existing activities are concentrated on the two highly urbanized provinces, the Copper Belt and Lusaka. Concludes that the lack of written rules and manuals has resulted in ILL arrangements failing to operate smoothly and that there is an urgent need to introduce an effective regulatory structure.

Moran (1996)[121] reports that at most academic medical institutions, the first level of library service is provided by health sciences or medical school libraries. For many medical departments, however a second level library, the departmental library, also provides these services. These libraries are usually supported by a specific department, such as surgery and provide customized services to this sponsor. Departmental libraries continue to play an important

role amid the debate over centralised versus decentralised library systems. On the basis of a limited survey, it described a representative medical departmental library.

An evaluation of reference enquiries and the way they were answered, at the Media Library of the Robert Wood Johnson Medical School, New Jersey was presented by Etter (1995).[122] The questions were categorised as audiovisual, computer, book/journal related, or information seeking. The degrees of success in answering the inquiries were analysed and the importance of referrals estimated.

Broering (1994)[123] noticed that advances in information technology have led to an extraordinary transformation in libraries; changing not only the way libraries provides services to users, but also the nature of these services. Medical libraries specially have been in the forefront of these changes.

The health care system of Sultanate of Oman and the role of the Ministry of Health and Sultan Qaboos University in the development of the health information services were described by Bhatti and Tariq (1993).[124] further recommends the establishment of a consortium of biomedical libraries with the co-operation of the Ministry, the University and the regional office of WHO to improve resource sharing and to provide a cost effective document delivery system throughout the Gulf region.

Dixit (1993)[125] surveyed succinctly the historical development of Indian health science libraries. With this background it illustrates the outcome of a study conducted for the purpose of assessing the strengths and

weaknesses of prevalent health literature information services such as bibliographical, current awareness, selective dissemination of information, MEDLARS/MEDLINE, indexing and abstracting, translation and reprographic services of 240 medical libraries belonging to modern medicine (allopathy system) and recommends the suitable steps to be undertaken to optimize the utilization of available resources and services.

The need for active participation of libraries and whole hearted cooperation of the participating libraries can solve any type of problems and make the inter library lending service as a successful venture beneficial to the potential user community was stressed by Balasubramanian (1990).[126] In some cities it can be practiced as a first step and the benefits and users' satisfaction can be appraised. Every effort should be made to get the help of state governments, central government and private managements in this regard. A separate central as well as state legislation will be helpful to achieve the objectives of libraries.

2.9 INFERENCES ON THE REVIEW OF LITERATURE

From the review of literature, the following inferences could be drawn:

1. A total of 126 studies have been covered in this chapter. The following topics have been identified under which the review has been grouped and enumerated, such as medical libraries and training, library collection development, library manpower development, ICT application in libraries, library

consortia/networks, library standards, library surveys and evaluation of library services.

2. Most of the literature represents America and European countries. However a substantial quantum of literature has also been published from India.

3. Although there are a number of studies representing ICT applications in libraries in general, only few studies reveals ICT application in medical libraries.

4. A majority of the studies represents case studies, survey studies and publications in seminar proceedings.

5. The literature review represents contributions in the recent two decades.

6. The review reveals that there are no current standards on manpower planning in medical libraries as far as India is concerned.

7. The standards proposed by MCI (Medical Council of India) have not been revised since the 80's.

8. There are some studies in the Indian context on the proposal of consortia approach to different types of libraries, but no study has been focused on medical libraries either for India in general or for Tamil Nadu in particular.

9. It is noticed that many surveys reported in the review represent either at regional or at local level.

10. There is no comprehensive study that covers medical libraries in Tamil Nadu.

Therefore the present study bridges the gap and proposed to conduct a comprehensive survey of medical, dental and paramedical libraries in Tamil Nadu with a proposal for consortia approach.

In the next chapter the growth and development of medical education institutions in Tamil Nadu has been discussed.

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Chapter 3

Growth and Development of Medical Education in Tamil Nadu

CHAPTER III

GROWTH AND DEVELOPMENT OF MEDICAL EDUCATION IN TAMIL NADU

3.1 INTRODUCTION

The Tamils had a distinct civilisation that is not disputed by historians. They recorded the history of the Tamils which is millions of years old. The literature of the Sangam period is ample testimony to the extent of Tamil civilisation and eminence. A civilised society must naturally have had a system of medicine like other fields which catered to the health of its people. Unfortunately Tamil Nadu lacks in its work in medicine. But the available sources could be assessing that the art of medicine that prevailed was of high order. The history of medicine is as old as the history of mankind.[1] Thirukural, the sacred book, a masterpiece of Tamil literature and one of the highest and purest expressions of human thoughts has devoted liberally to medicine.

In course of time, medicine in Tamil Nadu took the nomenclature of Siddha medicine as it was practiced by a particular group known as Siddhers. The coming of Jains brought a new change in the lives of Tamils and they were very much interested in promoting education in medicine, more particularly Siddha medicine. Even though the Siddhers were spread all over India, their books were found written only in Tamil. So Siddha medicine also

could be called as Tamil Medicine. But the origin of Tamil medicine was shrouded in mystery.

3.2 HISTORY OF MEDICAL EDUCATION IN TAMIL NADU

Relevance of medical education and hospitals in South India can be traced from the Tamil inscriptions of the Imperial Cholas (900-1200 A.D.). Most worthy of mention is the Tirumukkudal (Chengalpattu District) Inscription of Virarajendra, dated A.D. 1067, (Epigraphic Indica XXI, p. 220). This gives a detailed account of a medical college, a hostel and a hospital. [2]

There were a large number of hospitals known as 'Atulasalai' or 'Vaidyasalai' in Thirumukkudal in which there were fifteen beds, one surgeon, two nurses, one barber and two servants. The doctors were paid an amount for their maintenance known as 'Vaidayavritti' or 'Vaidyakam'. Each hamlet in the Tamil Country seems to have had a hereditary medical man known as "Savarnnan' and a small clinic for medical needs. The physician was known as a Vaidyan and a surgeon as 'Calliyakkiriyai Ceyvan'.[3]

3.2.1 Introduction of Western Medicine and Education in Tamil Nadu

Allopathy, the new system of medicine was introduced by the Europeans, more specifically by the British. Initially the Western Hospital System was introduced to look after the sick soldiers of the East India Company and it had grown and transformed itself into the most complex

modern system of medical care involving the public and the government alike.

3.2.2 Early Hospitals in Madras

The first hospital in Madras was opened in 1664, the house of Andrew Cogan was taken up for rent to the tune of two pagodas a month for this purpose. Thus Madras may well claim the unique distinction of being the first city to have a well established hospital in Tamil Nadu. Military Hospital was established in Madras in 1679 to cater to the needs of the British soldiers. In the year 1745, a Naval Hospital was established in Madras which was in use till 1790, when the British sailors who till then were treated there were transferred to the Garrison Hospital. In 1808, a new Naval Hospital was constructed and was in use up to 1831, when the buildings were converted into a gun carriage factory.

According to a public letter from Madras dated 26th September 1816, a hospital exclusively for lepers was established at a cost of 983 pagodas which was later known as the Madras Government Leper Hospital. In 1921, during the Governorship of Lord Willington, the Hospital was closed and the Willington Leper Settlement was started at Chengalpattu, manned by the Missionary.[4] The oldest Ophthalmic Hospital of the country was established at Egmore, Madras in the year 1819.

3.2.3 The Origin and Evolution of Medical Education

The year 1835 could be rightly called as the 'Sheet Anchor' in the chronology of the history of medical education in Tamil Nadu. It was from this year, that the East India Company's Madras Government began to foster and encourage medical education in a systematic manner.

3.2.3.1 The Madras Medical School

The Madras Medical College, one of the pioneering institutions in the Indian subcontinent was inaugurated as a medical school by the then Governor Frederic Adam in accordance with the order of the government, dated 13th February 1835. The school began its first session on 1st July 1835. The medical school was opened with the object of affording better means of instruction to Indo-British and Indian youth entering the medical branch of service in Madras Presidency and to make the medical subordinates more efficient in the performance of their professional duties and to give them a more systematic course of study and training under capable officers than was possible under arrangements then existing. In 1838, the school was thrown open to the civilians or private students who received, along with the government students, a free education.

As years passed, more and more students joined this institution and this enhanced the popularity of the school, which became a recognised centre of medical education and was considered on par with Calcutta and Bombay medical schools. On 1st October 1850, the Madras Medical School was raised to a higher status of a 'College' on the basis of the representation made by the

school council through the medical board and henceforth the Madras Medical School was known as the Madras Medical College.

Sir Henry Pottiger, the then Governor of Madras in 1851, advocated the introduction of Medicine and Engineering under the direction of the Madras University.

Meanwhile in 1854, a requisition was made to the Royal College of Surgeons, London, for the recognition of the Madras Medical College 'as one of the Colonial Schools of Medicine and Surgery', which was granted in 1855.[5]

In 1863, the Madras University which has been constituted by the Act XXVII of 1857 claimed the exclusive right to award medical degrees and diplomas. The government made it mandatory to all those students who wished to obtain their academic degrees in medicine to pass the university examinations conducted by the medical faculty of the Madras University.

Though the Madras University came into existence as early as 1857, it asserted its right to conduct examinations and to issue Degrees and Diplomas only by 1863. Due to this transfer of 'Attorney of Power' from the Medical College to the Madras University, a new leaf was turned in the history of medical education in India in general and Tamil Nadu in particular. It was a decisive turning point in the evolutionary growth of the medical education and from then onwards it developed very rapidly by widening its jurisdictions in all directions in order to achieve the state of full-fledgedness and self-sufficiency.[6]

By the General Order No.6 of 11th January 1875, history was made in the Madras Medical College, when women candidates were admitted for the first time on the recommendations of Surgeon-General, Balfour. Interestingly this was possible in Madras Medical College when no other Medical College in India had even dreamt of such a thing and even in Great Britain the doors of medical course were not yet opened for women.

On 24th September 1875, again history was made when the government instituted the 'Licentiate of Medicine and Surgery' (L.M.S.) for the first time in the country at the Madras Medical College. This paved the way for larger number of students to enter the medical profession. By 1885, after half a century of existence, the Madras Medical College had trained 1,523 Indians and Europeans for the subordinate medical service, of which 24 became graduates of the college.

3.2.3.2 Auxiliary Medical School

In September 1887, the Auxiliary Medical School at Royapuram (Madras) was closed and was shifted to the Madras Medical College while the clinical training of the students was given in the Monegar Choultry Hospital. In 1889-90, a new laboratory and a new office building were added to the college premises.

The role of medical schools in the history of medical care in India is of equal importance to that of medical colleges and the qualification required to join was generally matriculation. The Schools include the Auxiliary

Medical School at Royapuram, the native infirmary and the Prince of Wales Medical School at Tanjore by the Year 1886.

The Auxiliary Medical School at Royapuram to enhance the strength of the medical subordinate department in order to combat the famine in Madras. Later this school got affiliated to the Madras Medical College in 1879.As a policy decision, the then government closed all the medical schools from 1900-1920 except the Auxiliary Medical School at Royapuram. In 1933 the Auxiliary medical school was named as the 'Stanley Medical School'. On 2nd July 1938 the school was raised to the status of 'Stanley Medical College'.[7]

3.2.3.3 The Christian Medical College, Vellore (C.M.C.)

In 1918, Lord Pentland declared the Missionary Medical School open. In January 1950, the Madras University accorded recognition to this college and it was also recognised for the postgraduate M.D. and M.S. degrees and diplomas in Tuberculosis.

The college was supported by 39 Churches and Mission Societies in India, U.S.A., Canada, U.K., Australia and Denmark and administered by a Council in India consisting of their representatives. Today, the Christian Medical College is one of the foremost medical institutions in India in general and Tamil Nadu in particular.

3.2.3.4 Medical Colleges established after Independence

3.2.3.4.1The Kilpauk Medical College

Though it was started in 1924, as a Government Indian Medical School, only in 1948 this Institution was converted into a college of Indian Medicine. A Government Degree 'G.C.I.M.' (Graduate of the College of Indigenous Medicine) was conferred on its graduates. Later the work 'Indigenous' was replaced by the word 'Integrated' to indicate that the graduates were trained both in indigenous and in modern systems of medicine.

The Government of India decided to abolish the G.C.I.M. Course in June 1960 and hence the college of Integrated Medicine was converted into a modern medical college and renamed later as 'The Kilpauk Medical College' for imparting allopathy medical education leading to the M.B.B.S. Degree in the year 1960.

3.2.3.4.2 The Madurai Medical College

The government sanctioned the opening of the Madurai Medical College with effect from July 1946 and the Madras University sanctioned the admission of 50 students to this college from July 1946. It was only after Independence that a final decision was taken and a concrete shape was given to the idea of building a Medical College at Madurai.

3.2.3.4.3 The Thanjavur Medical College

The State Government of Madras established the Thanjavur Medical College in 1960. Today the Thanjavur Medical College is a full fledged medical college with undergraduate and postgraduate classes.

3.2.3.4.4 The Chengalpattu Medical College

The Chengalpattu Medical College was started in July 1965, when 50 students were admitted initially to the M.B.B.S. Course.

3.2.3.4.5 The Coimbatore Medical College

The Coimbatore Medical College was started in 1965, first it was affiliated to the Madras University and later got recognition from the Medical Council of India. Hostel facilities are available to men to women students.

3.2.3.4.6 The Tirunelveli Medical College

Tirunelveli Medical College was started in 1965 by the than Madras State Government.

3.2.3.4.7 Sri Ramachandra Medical College and Research Institute (SRMC)

It was established on 10th September 1985 as a self financing institution. The S.R.M.C. has its own 176 acre land with multistoried complex at Porur, Chennai. It is a research centre par excellence for conducting higher

medical research in various specialties and it is one of the few of its kind in Tamil Nadu.

3.2.3.4.8 The Government Mohan Kumaramangalam Medical College (Salem)

The Government Mohan Kumaramangalam Medical College at Salem was started in 1985. Apart from the above mentioned colleges, in the recent years, a mushroom growth of private medical, dental and paramedical colleges were established.

3.3 ADMINISTRATIVE SET UP OF MEDICAL EDUCATION IN INDIA WITH SPECIAL REFERENCE TO TAMIL NADU

Medical education has received wider attention because of its urgency in securing prosperity for the people and even more so, because of its long range relationship to social order. As the application of science and technology to public health and other activities become wider and intensive, the need for doctors of various kinds increases. The promise of medical education is the prime of all these activities.[8]

Since the establishment of Madras Medical College, the world of medicine and medical education has grown enormously. There has been a mushroom growth of innumerable medical, paramedical and surgical institutions, besides research institutes for specialised research in every branch of medicine along with clinical and non-clinical institutes both private and government owned, which offers an ocean of degrees and diplomas at

various levels. In order to provide an efficient administration a systematic set up of management has been adapted.

3.3.1 The Institutional Setup of Medical Education in Tamil Nadu

The administration of medical education was first placed under the purview of the Director of the Directorate of State Health Services. In order to meet the requisites and demands of the concerned, a manpower committee was set up and on the basis of its report the budget allocation is made on an annual basis to medical institutions in the state.

3.3.2 Medical Council of India (MCI)

The Medical Council of India was established in 1934 under the Indian Medical Council Act, (1933) on the lines of Medical Council in U.K, to offer guidelines and set standards for the establishment of medical colleges in India. The number of medical colleges had increased steadily during the years after independence. It was felt that the provisions of Indian Medical Council Act were not adequate to meet with the challenges posed by the very fast development and the progress of medical education in the country. As a result in 1956, the old act was repealed and a new one was enacted. This was further modified in 1964, 1993 and 2001.[9]

The objectives of the Council are as follows:

- Maintenance of uniform standards of medical education, both undergraduate and postgraduate.

- Recommendations for recognition/de-recognition of medical qualifications of medical institutions of India or foreign countries.

- Permanent registration/provisional registration of doctors with recognised medical qualifications.

- Reciprocity with foreign countries in the matter of mutual recognition of medical qualifications.

3.3.3 Dental Council of India (DCI)

In consonance of the provisions of the Act, Dental Council of India is entrusted with the following objectives

- Maintenance of uniform standards of Dental Education both at Undergraduate and Postgraduate levels. (a) It envisages inspections of Dental Colleges for permission to start Dental colleges, increase of seats, starting of new P.G. courses (as per provisions of section 10A of the Act).

- To prescribe the standard curricula for the training of dentists, dental hygienists, dental mechanics and the conditions for such training;

- To prescribe the standards of examinations and other requirements to be satisfied to secure for qualifications recognition under the Act.

To achieve these, the needs are:

- Uniformity of curriculum standards of technical and clinical requirements, standards of examinations; A uniform standard of entrance to various courses in dentistry;
- Affiliation of every dental college to an university;
- Supervision over all the dental institutions to ensure that they maintain the prescribed standards, regulation of the profession of dentistry.[10]

3.3.4 Pharmacy Council of India (PCI)

The Pharmacy Council of India is a statutory body constituted under the Pharmacy Act, 1948. It is responsible for regulation for pharmacy education and practice of profession in the country for registration as a pharmacist.[11]

3.3.5 Indian Nursing Council (INC)

The Indian Nursing Council is a statutory body constituted under the INC Act, 1947. The council is responsible for regulation and maintenance of uniform standards of training for nurses, Auxiliary Nurses and Midwives (ANMs) and lady health visitors in India. The council prescribes the syllabi and regulations for various nursing courses.[12]

3.3.6 Central Council of Indian Medicine (CCIM)

Council of Indian Medicine is a statutory body constituted under the Indian Medical Council Act, 1970 vide gazette notification extraordinary part (i) section 3(ii) dated 10.8.71. The Central Council was reconstituted in 1984 and 1995. The main objectives of the Central Council are:

- To prescribe minimum standards of education in Indian System of Medicine viz. Ayurveda, Siddha and Unani.
- To advise Central Government in matters relating to recognition (inclusion/withdrawal of medical qualification in /from second schedule to Indian Medicine Council Act, 1970).
- To maintain a Central Register on Indian Medicine and revise the register from time to time.
- To prescribe standards of professional conduct, etiquette and code of ethics to be observed by the practitioners.[13]

3.3.7 Directorate of Medical Education, Government of Tamil Nadu

The Directorate of Medical Education, Government of Tamil Nadu was bifurcated in the year 1966 from the Directorate of Medical Services. It is functioning as a separate Directorate for the last five decades. It is controlling medical colleges and attached teaching hospitals. Directorate of Medical Education is entrusted with the responsibility of implementing teaching,

training and research programmes in the medical fields and patient care services.

The Director of Medical Education is the Head of the Department and he/she is assisted at the state headquarters by the following personnel:

1. Additional Director of Medical Education and Secretary, Selection Committee.
2. Joint Director of Medical Education (Pharmacy)
3. Deputy Director of Medical Education (Administration)
4. Deputy Director of Medical Education (P & D)
5. Deputy Director of Medical Education (A & R)
6. Deputy Director of Medical Education (H&D)
7. Deputy Director of Medical Education (MCI)
8. Deputy Director of Medical Education (PG)
9. Deputy Director of Medical Education (UG)
10. Deputy Director of Medical Education (Controller of Examination-PME)
11. Deputy Director of Medical Education (Nursing)
12. Deputy Director of Medical Education (Statistics)
13. Law Officer

14. Financial Advisor & Chief Accounts Officer

15. Administrative Officer (Manager)

16. Administrative Officers for various subjects.

The functions of the Director of Medical Education are two folded. One is education in medical/dental/paramedical sciences and the other one is clinical care in the teaching hospitals administered by the Director. Besides the Director is also empowered to regulate the functions of private self financing medical/dental/paramedical colleges.

At present 15 government medical colleges, 1 government dental college are functioning in the state under the Director of Medical Education. Forty hospitals are under the control of this Directorate. Every year, more than a thousand graduates and more than nine hundred medical postgraduates, diploma and higher specialties graduates come out from the government medical institutions after the completing the courses.[14]

3.4 THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI

The Tamil Nadu Dr.M.G.R. Medical University Act, 1987 (Act No.37 of 1987) received the assent of the President of India on 24th September, 1987. By Act No.9 of 1991, it was ordered that the act may be called the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Act, 1987. This affiliating university started functioning from July 1988 and is governed by the said act. The Tamil Nadu Dr. M.G.R. Medical University is situated in

Southern part of the city of Chennai (formerly Madras) in the state of Tamil Nadu. It is about 6 Km from the Chennai International and National Airport and about 12 km from the Chennai Central Railway Station.

It is one of the premier medical universities of India named after the former Chief Minister of Tamil Nadu, late Dr.M.G.Ramachandran (M.G.R) and it is the second largest health sciences university in India. This is the only medical university in Tamil Nadu capable of granting affiliation to new medical, dental and paramedical colleges, government or self-financing; and awarding degrees (until 1988, all degrees of health sciences were awarded by the University of Madras). Besides medical and paramedical courses, the university also regulates dental education and education in the Indian Systems of Medicine under a single umbrella to maintain uniform and high standards of medical education.[15]

3.4.1 Mission Statement of the Medical University

- To achieve and maintain uniformly high standards of needs-responsive medical education in the State of Tamil Nadu; and

- To create personnel for health manpower who will be endowed with a sense of dedication and a spirit of enquiry and will contribute substantially to the Alma Ata goals of health for all by 2010 A.D.

3.4.2 Objectives of the Medical University

- To maintain uniform standards of high quality medical education throughout the state of Tamil Nadu;
- To provide for instructions and training in such branches of learning as it may determine in the field of medical sciences;
- To institute degrees, diplomas and other academic distinctions;
- To institute lectureships, readerships, professorships and other teaching posts required by the university and to appoint persons to such lectureships, readerships, professorships and other teaching posts;
- To institute and award fellowships, scholarships, studentships, exhibitions, medals and prizes in accordance with the status;
- To institute research posts and to appoint persons in such posts;
- To organise advanced studies and research programmess from time to time;
- To develop research facilities and to provide for research and for the advancement and dissemination of knowledge in the field of medical sciences;
- To provide for continuing medical education;
- To establish, maintain and manage institutions of research, university colleges, departments and laboratories; and,

- To encourage co-operation among the colleges, laboratories, hospitals and institutions in the university area and to co-ordinate with other universities and other authorities in such a manner and for such purposes as the university may determine.

The university emblem symbolises various systems of medicine and paramedical systems. It also depicts the global character of preventive, promotive and curative medicine. The motto "HEALTH FOR ALL" reflects all the objectives of this medical university.

3.4.3 Activities of the Tamil Nadu Dr. M.G.R. Medical University

The Tamil Nadu Dr. M.G.R. Medical University has a large number of faculties in almost all the post-graduate courses/super-specialty courses and new faculties are being covered in this universities fold. Faculties in the university are as follows:

1. Faculty of Basic Medical Sciences
2. Faculty of Medicine and Medical Specialties
3. Faculty of Surgery and Surgical Specialties
4. Faculty of Pediatrics and Pediatrics Specialties
5. Faculty of Obstetrics and Gynecology and related Specialties
6. Faculty of Dentistry
7. Faculty of Pharmacy

8. Faculty of Nursing
9. Faculty of Siddha
10. Faculty of Ayurveda
11. Faculty of Unani
12. Faculty of Homeopathy
13. Faculty of Bio-Medical Sciences.
14. Faculty of Community Health, Social Sciences and history of medicine

The University offers the following degrees:

- Under graduate courses
- Post graduate diploma courses
- Post graduate courses
- Paramedical post graduate degree
- Post graduate degree (higher specialties)

3.5 DEEMED MEDICAL UNIVERSITIES (Formerly Self-financing Medical Colleges)

Deemed to be Universities (commonly referred to as Deemed Universities) represent a category of university level institutions, unique in India, that have traditionally been respected for the quality, relevance and diversity of their programmes. In the past, academic institutions were conferred the status of deemed universities in recognition of their rich

academic traditions, unique character, academic excellence or relevance to the nation's requirements. However, after the issue of new guidelines by the Government of India for the conferment of deemed university status, in 2000, a relatively large number of academic institutions have been designated as deemed universities. In Tamil Nadu also a handful of private medical institutions have been elevated to the status of deemed universities especially after 2000, when the University Grants Commission framed new guidelines for the conferment of deemed university status.

At present, the following self-financing medical education institutions have been upgraded as deemed universities:

1. Sri Ramachandra University (Sri Ramachandra Medical College Research Institute, Porur, Chennai)
2. Vinayaka Mission's Kirupananda Variyar University, Salem (Vinayaka Mission's Kirupananda Variyar Medical College)
3. Meenakshi University (Meenakshi Medical College and Research Institute, Kanchipuram)
4. S.R.M.University, Kattankulathur (S.R.M. Medical College)
5. Bharath University, (Balaji Medical College, Chromepet, Chennai)
6. Dr. M.G.R. University, Maduravoil, Chennai, (Dr. M.G.R. Medical College)

7. Saveetha University, Chennai (Saveetha Medical College)

8. Saraswathy Viswa Ayurved Mahavidyalaya, Enathur, Kanchipuram (Sri Jeyendrar Ayurveda Medical College).

3.6 ANNAMALAI UNIVERSITY

The Annamalai University is a unitary residential university imparting instruction in post-graduate and professional programmes in several disciplines, besides providing research programmes up to the Ph.D., D.Litt. / D.Sc. levels. It was founded by the Dr. Rajah *Sir* Annamalai Chettiar of Chettinad. He started several colleges and ultimately, the University in 1929. During the last 80 years, it has grown rapidly and has consolidated its position as a unitary and residential university. The Rajah Muthiah Medical College was established on 5th August, 1985. This is the second phase of the development of the Rajah Muthiah Institute of Health Sciences, since the Rajah Muthiah Dental College was started in the first phase in 1980.

The Rajah Muthiah Medical College Hospital which is the teaching hospital for Rajah Muthiah Medical College serves the needs of the surrounding areas by providing medical treatment with skilled doctors in the well equipped hospital. Apart from ensuring curative and rehabilitative services through the hospital, community services on the preventive and primitive sides are also being meaningfully organised, keeping in view the health needs of the rural as well as the urban sectors of the community. [16]

A special feature of Rajah Muthiah Medical College is that, it is one of the very few medical colleges in India directly run by a university. As a university medical college with a residential system, there are ample opportunities for healthy interaction and learning from multi-disciplinary facilities available in the campus of the Annamalai University. Rajah Muthiah Medical College has been granted permanent recognition by the Medical Council of India for 150 annual admissions into the M.B.B.S. programme. It has also been granted permission to run postgraduate degree programmes in 18 different specialties with effect from the academic year 1997-98, of which 17 postgraduate degrees are already recognised by the Medical Council of India and the Government of India.

3.7 MEDICAL EDUCATION INSTITUTIONS TAMIL NADU

The establishment of Madras Medical College in Tamil Nadu, which is the second medical college in India, was a turning point in the growth of medical education in the state of Tamil Nadu. This was followed by a number of colleges established by the State Government and self-financing institutions. At present there are about 275 medical educational institutions in Tamil Nadu, out of which 236 colleges come under "Self-financing" category. The first medical university for medicine was started in Andhra Pradesh and the second one is in Tamil Nadu named as The Tamil Nadu Dr. M.G.R. Medical University.

Table 3.1 presents the growth of medical, dental and paramedical institutions till 2008. It is seen from the Table that more number of colleges

established since 1996 onwards, due to the government policy towards privatisation of education. Hence Tamil Nadu represents spectacular growth of medical, dental and paramedical institutions.[17]

Table 3.1

Classification of Medical Education Institutions in Tamil Nadu by Year of Establishment as on September 2008

S No	Period	Medical	Dental	Paramedical	Total
1	Before 1950	03 (1.9%)	-	-	3 (1.9%)
2	Between 1951 and 1960	02 (0.7%)	-	-	2 (0.7%)
3	Between 1961 and 1970	05 (1.8%)	-	-	5 (1.8%)
4	Between 1971 and 1975	-	-	-	-
5	Between 1976 and 1980	04 (1.4%)	02 (0.7%)	06 (2.2%)	12 (4.4%)
6	Between 1981 and 1985	04 (1.4%)	-	06 (2.2%)	10 (3.6%)
7	Between 1986 and 1990	10 (3.6%)	07 (2.5%)	15 (5.5%)	32 (11.6%)
8	Between 1991 and 1995	06 (2.2%)	-	67 (24.4%)	73 (26.5%)
9	Between 1996 and 2000	12 (4.4%)	04 (1.4%)	48 (17.5%)	64 (23.3%)
10	Between 2001 and 2008	23 (8.4%)	12 (4.4%)	39 (14.2%)	74 (27.0%)

The medical educational institutions in Tamil Nadu can be broadly grouped as follows (Table 3.2):

1. Universities
2. Government Institutions
3. Self –Financing Institutions

Table 3.2

Classification of Medical Education Institutions by Type of Management

S No	Type of Institutions	Frequency	Percentage
1	Universities	10	3.7
2	Government Institutions	29	10.5
3	Self financing Institutions	236	85.8
Total		275	100

3.7.1 Universities

In Tamil Nadu there are ten universities providing instruction to medical science disciplines at Bachelors', Masters' and Doctoral levels. The first government medical science university is the Tamil Nadu Dr. M.G.R. Medical University located in Chennai established in 1987.

With the privatisation of education, a number of self financing colleges were established for medical education, has been elevated to the status of universities.

3.7.2 Government Medical Education Institutions

The first and foremost Government College as stated earlier was established in Madras (now Chennai) in 1835, which subsequently became the constituent unit of The Tamil Nadu Dr.M.G.R. Medical University since 1987. As on today, there are 29 government medical education institutions located at different parts of Tamil Nadu.

3.7.3 Self-Financing Medical Education Institutions

There are about 236 self-financing medical education institutions, of which majorities were established since nineties. Prior to 1990, there were 64 medical institutions and by 2008 the number raised to 275.

The data in Table 3.3 explains the quantum of medical education institutions in Tamil Nadu by district wise. Chennai district has the maximum number of institutions (65) which include 12 government and 53 self-financing institutions. This is followed by Coimbatore district (36) having 1 government institution and 35 self-financing institutions. The 3rd rank goes to Kanchipuram district with 1 government institution and 23 self-financing institutions. There are districts without medical education institutions in Tamil Nadu such as Villupuram, Krishnagiri, Ariyalur, and Tiruvarur. In many districts there are no government medical institutions.[18]

Table 3.3

Quantum of Medical Education Institutions in Tamil Nadu by District Wise (as on September 2008)

S No	District	Government	Private	Total
1	Chennai	12	53	65
2	Kanchipuram	01	23	24
3	Vellore	01	11	12
4	Tiruvannamalai	-	03	03
5	Dharmapuri	01	04	05
6	Salem	01	14	15
7	Erode	-	12	12
8	Namakkal	-	16	16
9	Coimbatore	01	35	36
10	Ramanathapuram	-	01	01
11	Karur	-	01	01
12	Krishnagiri	-	-	-
13	Sivaganga	-	04	04
14	Thanjavur	01	03	04
15	Dindigul	-	04	04
16	Pudukottai	-	01	01
17	Tirunelveli	02	09	11
18	Theni	01	-	01
19	Thiruvallur	-	06	06
20	Tirvarur	-	-	-
21	Kanyakumari	01	14	15
22	Tiruchirappali	02	08	10
23	Thoothukudi	01	-	01
24	Nagapattinam	-	01	01
25	Nilgiris	-	03	03
26	Madurai	04	11	15
27	Virudhunagar	-	02	02
28	Perambalur	-	02	02
29	Villupuram	-	-	-
30	Cuddalore	-	05	05
31	Ariyalur	-	-	-
Total		**29**	**246**	**275**

Table 3.4 reveals the quantum of medical education institutions by category wise. It is observed that there are about 182 paramedical institutions, followed by 68 medical education institutions and 25 dental institutions. [19]

Table 3.4

Quantum of Medical Education Institutions in Tamil Nadu by Category Wise as on September 2008

S No	District	Medical	Dental	Paramedical	Total
1	Chennai	17	10	38	65
2	Kanchipuram	08	04	12	24
3	Vellore	04	-	08	12
4	Tiruvannamalai	-	-	03	03
5	Dharmapuri	01	-	04	05
6	Salem	05	01	09	15
7	Erode	03	-	09	12
8	Namakkal	01	03	12	16
9	Coimbatore	07	01	28	36
10	Ramanathapuram	-	-	01	01
11	Karur	-	-	01	01
12	Krishnagiri	-	-	-	00
13	Sivaganga	-	-	04	04
14	Thanjavur	01	-	03	04
15	Dindigul	-	-	04	04
16	Pudukottai	-	-	01	01
17	Tirunelveli	03	01	07	11

S No	District	Medical	Dental	Paramedical	Total
18	Theni	01	-	-	01
19	Thiruvallur	01	01	04	06
20	Tirvarur	-	-	-	-
21	Kanyakumari	06	01	08	15
22	Tiruchirappali	03	-	07	10
23	Thoothukudi	01	-	-	01
24	Nagapattinam	-	-	01	01
25	Nilgiris	01	-	02	03
26	Madurai	03	02	10	15
27	Virudhunagar	-	-	02	02
28	Perambalur	-	-	02	02
29	Villupuram	-	-	-	00
30	Cuddalore	02	01	02	05
31	Ariyalur	-	-	-	-
Total		68	25	182	275

Table 3.5 presents the distribution of medical education institutions in Tamil Nadu by discipline wise. Out of 275 medical education institutions in Tamil Nadu as on September 2008 (Appendix-C),76 offers nursing, 8 Trained nursing,46 physiotherapy, 42 pharmacy, 30 medicine and 25 dental disciplines.[20]

Table 3.5

Distribution of Medical Education Institutions in Tamil Nadu by Discipline Wise as on September 2008

S No	Discipline	Government	Private	Total
1	Medicine	15	15	30
2	Siddha	03	04	07
3	Homoeopathy	01	09	10
4	Unani	01	-	01
5	Ayurveda	-	06	06
6	Dental	01	24	25
7	Pharmacy	02	40	42
8	Nursing	02	74	76
9	Nursing (Trained)	01	07	08
10	Physiotherapy	02	44	46
11	Occupational Therapy	-	07	07
12	Naturopathy & Yogic Sciences	01	04	05
13	Medical Record Science (B.M.R.Sc.,)	-	01	01
14	Medical Lab Technician (BSc., M.L.T)	-	01	01
15	Private college conducting Higher Specialty, P.G. Degree & Diploma in Medical courses	00	10	10
Total		**29**	**246**	**275**

3.8 CHALLENGES OF MEDICAL EDUCATION IN TAMIL NADU

The development of training in medical education and research cannot remain stagnant and static. It has to have a forward movement to keep pace, from time to time, with the latest advances in medical science. Postgraduate medical education comprehends (a) Medical education of the graduate after full registration (b) Acquiring qualification either for a diploma or a degree enabling the practitioner for specialisation and (c) Continuing education either for a general practitioner or a specialist. The aims of postgraduate medical education are to train generalists and specialists, to render a high standard of medical care, to produce competent teachers for the rapidly increasing medical institutes and research workers to do fundamental and applied research and finally to provide continuing education.

Unfortunately, most medical or health science universities established in the states have been instituted more as management imperatives when faced with the proliferation of medical institutions than with a long-term development strategy or research agenda. There is a widespread apprehension in academic circles that the uncontrolled proliferation of self-financing professional colleges will lead to lowering of standards in medical education and allied fields.

Self-financing colleges by their very nature are forced to levy heavy tuition fees, which will be beyond the means of most of the deserving students. This will result in merit becoming secondary to the financial

capabilities of the students and their parents, thus adversely affecting not only merit but also access and equity to medical education for deserving students.

3.8.1 Deficiency of Teachers

There are not enough trained teachers to cater for the huge number of seats created. Most private colleges rely heavily on retired teachers as the mainstay. Despite this, there is a big deficit in the number of teachers. In the case of nursing and pharmacy the situation is far worse.

3.8.2 Quality of Evaluation

When merit is compromised and quality of instruction inadequate, the failure rates are bound to be high in any properly conducted examination. This creates tremendous pressure on managements that levy, very high fees from students. Any compromise in the system of evaluation would lead to further decline in standards.

3.8.3 Non-functioning Controls

Uncontrolled and rapid increase in quantity has been without concurrent checks to assure quality. The apex councils like the Medical Council of India, Dental Council of India and Indian Nursing Council and the Pharmacy Council of India have inherent limitations in this regard.

3.8.4 Current System of Affiliation

The institutions catering to medical and allied subjects currently are affiliated to different universities, which also cater to a huge number of general colleges, besides their on-campus departments. There have been no significant efforts by the universities towards maintenance of standards in teaching or evaluation of the courses conducted by the affiliated colleges.

The Union Health Minister, Dr.Anbumani Ramadoss said in an interview to the online edition of India's National Newspaper The Hindu, Sunday, March 11, 2007, that the Health Ministry would take severe action against medical institutions "selling" postgraduate seats for exorbitant sums. It was unfortunate that medical education had become a business. It was disheartening for the government to receive reports of several medical colleges charging exorbitant amounts for postgraduate seats. For instance, complaints had come in that some colleges in Chennai were charging as much as Rs.1 crore for a postgraduate Radiology seat. The Minister warned that action would be taken against colleges that did not discontinue the practice immediately. Delivering the convocation address at the 13th Convocation of the National Board of Examinations, Dr.Anbumani expressed concern about medical education and health care delivery. The primary concern was rural health care, he said, adding that a big drawback in the speedy implementation of the National Rural Health Mission was manpower shortage.[21]

While the nation could boast of large and competent specialist manpower, nearly 70 per cent of the population had very poor access to health care. Nearly 40 per cent had poor access to even basic health care. The objective of the postgraduate medical education was to develop medical specialists for the health care delivery systems. But the fact was that most graduates and postgraduates went abroad or preferred to serve only in urban areas.

3.9 CONCLUSION

Medical education needs to adapt to society's changing attitude. There is a need to develop new methods of assessment to reflect the focus on competencies. Further a high quality inter-disciplinary collaboration is the need of the hour. Finally, close cooperation between doctors and educationists is indispensable for quality medical education.

In this chapter, a detailed account of the growth of medical education institutions in Tamil Nadu has been outlined. Although there is a spectacular growth in the number of medical educational institutions, the same are facing serious challenges as stated above. In view of these factors, in the next chapter a detailed survey and analysis of the state-of-the- art of libraries attached to the medical education institutions in Tamil Nadu, has been presented.

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Chapter 4

Analysis and Interpretation of Data

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

4.1 INTRODUCTION

In this chapter the data collected from the libraries of medical, dental and paramedical education institutions in Tamil Nadu are been analysed and interpreted to fulfill the stated objectives and test the hypotheses framed. The data has been presented in the form of tables supplemented with diagrams and figures.

4.2 SAMPLE SIZE

In chapter III it was stated that, there are about 275 medical education institutions in Tamil Nadu as on September 2008. However, at the time of data collection (during July-December 2007) there were about 241 medical education institutions. Therefore the questionnaires were administered to all the medical education libraries and 176 responses were received. The distribution of the questionnaires and the responses received from various categories of medical education libraries are presented in Table 4.1 and Figure 4.1.

Table 4.1

Number of Questionnaires Distributed and Responses Received

S No	Category	No. of Questionnaires Distributed	No. of questionnaire responded
1	Medical	62	42 (23.9%)
2	Dental	16	13 (7.4%)
3	Paramedical	163	121 (68.7%)
Total		**241**	**176 (73%)**

Response rate 73%

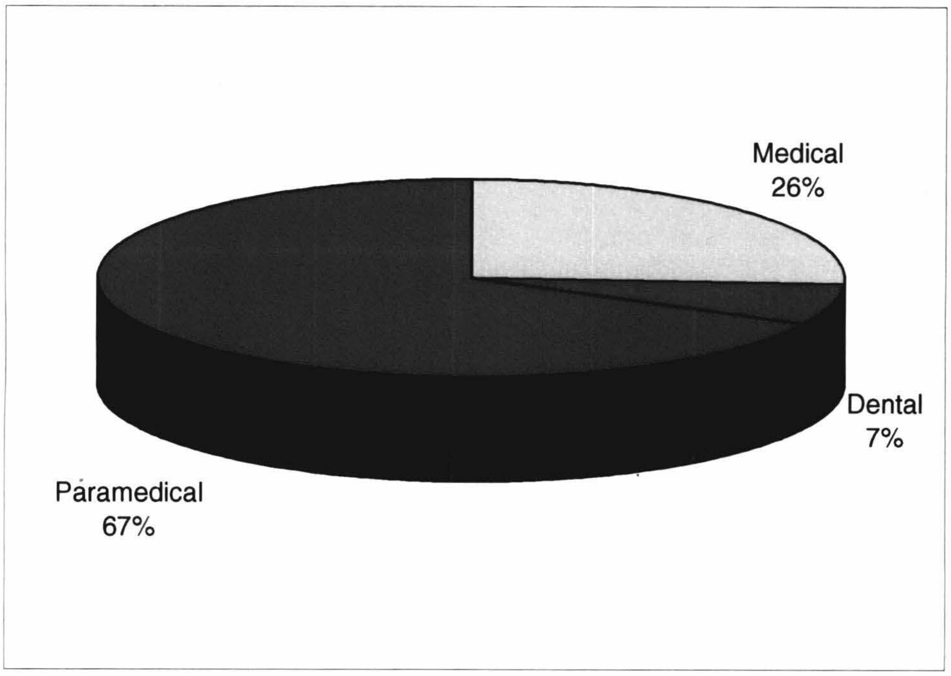


Figure 4.1 Number of Questionnaires Distributed and Responses Received

It is observed from the Table 4.1 that there were 62 medical, 16 dental and 163 paramedical institutions at the time of survey. Out of these 176 have responded comprising of 42 medical, 13 dental and 121 paramedical institutions. The response rate is 73%, which is reasonably a good sample size for a questionnaire survey. Added to this, the investigator has personally visited most of the libraries and observed the library setup to supplement and complement the data collected by way of questionnaire. Further the investigator has also conducted unstructured interviews with the librarians and elicited certain clarifications.

4.2.1 Classification of responded institutions by nature of management

The data in Table 4.2 and Figure 4.2 reveal the distribution of the sample institutions by nature of management. The medical education institutions have been broadly classified as universities, government colleges and self-financing colleges. A majority of institutions represent self- financing nature, since the Government of Tamil Nadu has allowed establishing institutions offering different levels of medical courses by private managements, there is only one state medical university named as the Tamil Nadu Dr.M.G.R.Medical University and 24 government colleges. In addition to this, one unitary university (Annamalai University) and 5 private universities which were earlier established as self financing colleges and elevated to the status of deemed universities and university status.

Table 4.2

Classification of Responded Institutions by Nature of Management

S No	Category	No. of Institutions	Percentage
1	Universities:		
	a. State owned	1	0.57
	b. Private	5	2.86
	c. Unitary	1	0.57
2	Government Colleges	24	13.6
3	Self- Financing Colleges	145	82.4
Total		**176**	**100**

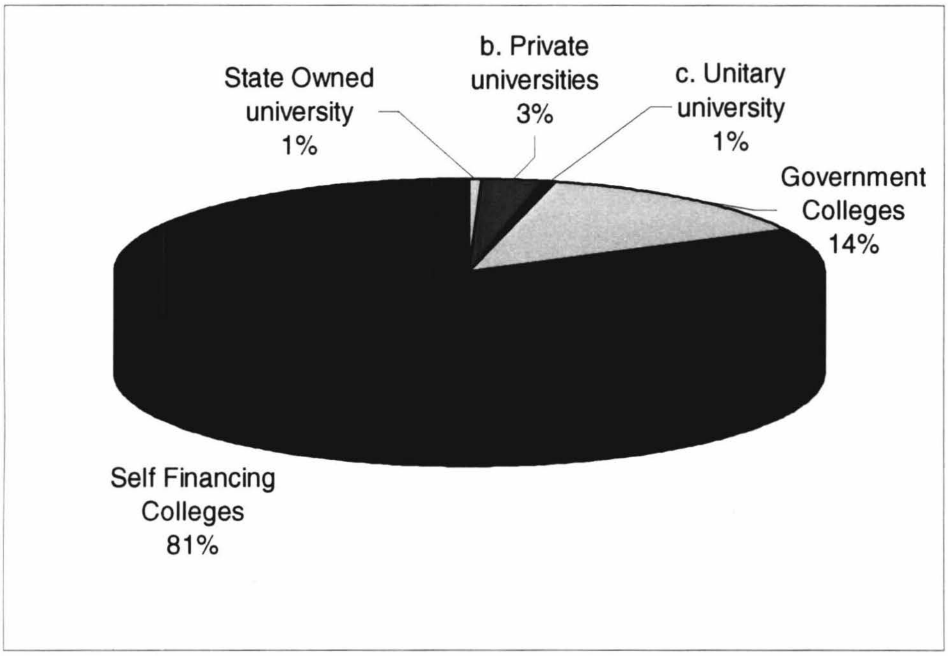


Figure 4.2 Classification of Responded Institutions by Nature of Management

4.3 BACKGROUND INFORMATION ABOUT THE SAMPLE LIBRARIES

4.3.1 Year of Establishment of the Medical Education Institutions

The data in Table 4.3 and Figure 4.3 present the distribution of libraries surveyed, by the year of establishment. It is found that only 3 medical colleges were established before Independence. Between 1976 and 1980, there were 4 medical and 2 dental colleges. After the formulation of the New Educational Policy, the establishment of medical education institutions by self financing managements has grown and by 2007 there were about 241. Further it is observed that a maximum of 72(29.9%) institutions were established during 1991-1995. This is followed by 64(26.5%) institutions established between 1996 and 2000.

Table 4.3

Classification of Medical Education Institutions by Year of Establishment

S No	Period	Medical n=62	Dental n=16	Paramedical n=163	Total n=241
1	Before 1950	3 (1.2%)	-	-	3 (1.2%)
2	Between1951 and 1960	2 (0.8%)	-	-	2 (0.8%)
3	Between 1961 and 1970	5 (2.1%)	-	-	5 (2.1%)
4	Between 1971 and 1975	-	-	-	-
5	Between 1976 and 1980	4 (1.7%)	2 (0.8%)	-	6 (2.5%)
6	Between 1981 and 1985	4 (1.7%)	-	6 (2.5%)	10 (4.2%)
7	Between 1986 and 1990	10 (4.2%)	7 (2.9%)	14 (5.8%)	31 (12.9%)
8	Between 1991 and 1995	5 (2.1%)	-	67 (27.9%)	72 (29.9%)
9	Between 1996 and 2000	12 (4.9%)	4 (1.7%)	48 (19.9%)	64 (26.5%)
10	Between 2001 and 2007	17 (7.0%)	3 (1.2%)	28 (11.6%)	48 (19.9%)
Total		**62 (25.7%)**	**16 (6.6%)**	**163 (67.7%)**	**241 (100%)**

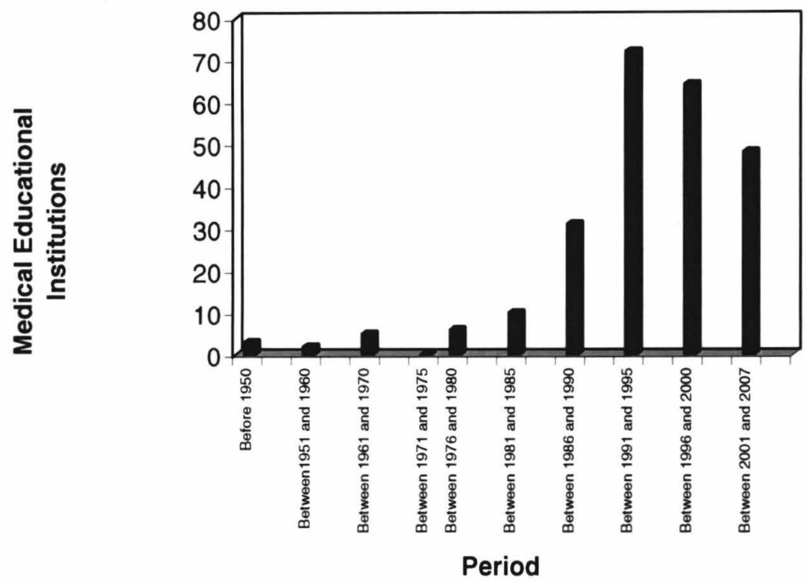


Figure 4.3 Classification of Medical Educational Institutions by Year of Establishment

4.3.2 Classification of Sample Institutions by Subject

The distribution of sample libraries was presented by broad subject wise in Table 4.4 and Figure 4.4. There are about 16 broad categories of medical courses covering medical, dental and paramedical subjects. Under medical category there are about 8 categories namely General Medicine, Ayurveda, Unani, Siddha, Yoga etc., 23 institutions belong to General Medicine (13.1%), followed by 6 (3.4%) Siddha institutions and 4 (2.3%) Homoeopathy. In paramedical categories there are 7 disciplines such as Nursing 43 (24.4%), Physiotherapy 33 (18.7%) and Pharmacy 32 (18.1%), etc.

Table 4.4

Classification of Medical Education Institutions by subject

S No	Subject	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Ayurveda	2 (1.1%)	-	-	2 (1.1%)
2	Cancer	1 (0.6%)	-	-	1 (0.6%)
3	Dental	-	13 (7.4%)	-	13 (7.4%)
4	Homoeopathy	4 (2.3%)	-	-	4 (2.3%)
5	Lab Technology	-	-	1 (0.6%)	1 (0.6%)
6	General Medicine	23 (13.1%)	-	-	23 (13.1%)
7	Medical records	-	-	1 (0.6%)	1 (0.6%)
8	Nursing	-	-	43 (24.4%)	43 (24.4%)
9	Occupational therapy	-	-	7 (4.0%)	7 (4.0%)
10	Ophthalmology	3 (1.7%)	-	-	3 (1.7%)
11	Pharmacy	-	-	32 (18.1%)	32 (18.1%)
12	Physiotherapy	-		33 (18.7%)	33 (18.7%)
13	Siddha	6 (3.4%)	-	-	6 (3.4%)
14	Trained Nursing	-	-	4 (2.3%)	4 (2.3%)
15	Unani	1 (0.6%)	-	-	1 (0.6%)
16	Yoga	2 (1.1%)	-		2 (1.1%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100%)**

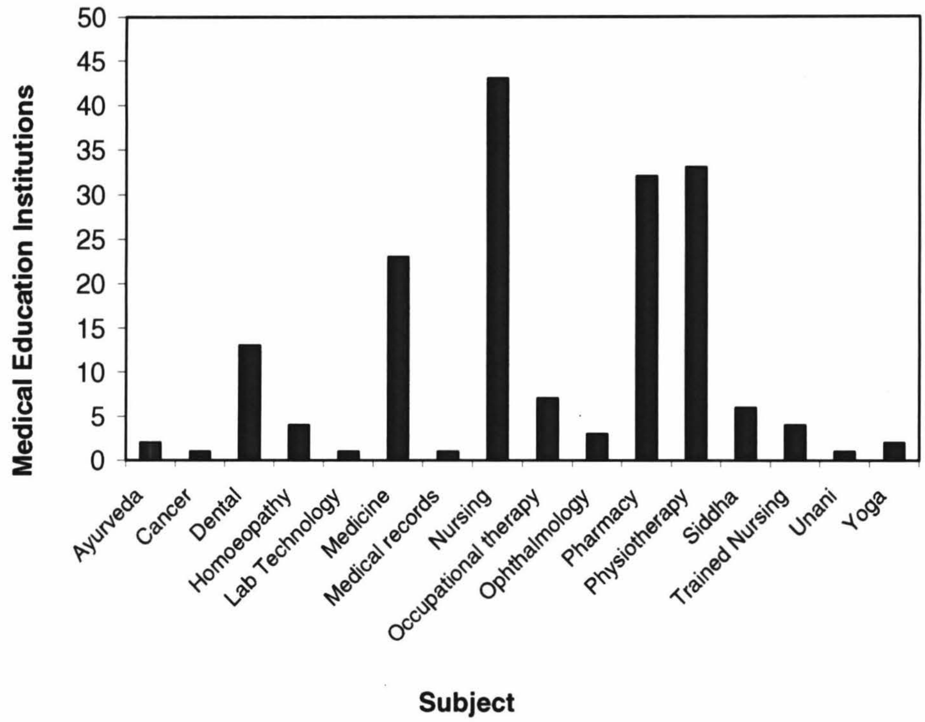


Figure 4.4 Classifications of Medical Education Institutions by Subject

4.3.3 Level of courses offered Vs Institution

The medical education institutions in Tamil Nadu offer courses starting from under graduate to doctoral level and also post graduate diploma courses in various branches of medicine. Nearly half of the sample (49.4%) offer courses both at U.G level and P.G. While 39.2% offer U.G. courses, 10.8% offer courses from U.G to doctoral and diploma level.

Table 4.5

Level of Courses offered Vs Institutions

S No	Courses offered	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	UG	19 (10.7%)	4 (2.3%)	46 (26.1%)	69 (39.2%)
2	UG and PG	11 (6.3%)	8 (4.5%)	68 (38.6%)	87 (49.4%)
3	UG, PG and Ph.D.	1 (0.6%)	-	-	1 (0.6%)
4	UG, PG, Diploma & Ph.D.	11 (6.3%)	1 (0.6%)	7 (4.0%)	19 (10.8%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100%)**

4.3.4 Staff Structure

The data in Tables 4.6, 4.7 and 4.8 presents the staff structure covering the teaching and Non- teaching and technical staff respectively in the sample institutions under the survey.

It is seen from the Table 4.6 that a majority (78) of the libraries (44.3%) having teaching staff below 10, followed by 75 institutions (42.6%) having staff between 11 and 20. By and large about 87% of the institutions are having staff upto 20 only.

Table 4.6

Teaching Staff Vs Institutions

S No	No. of Teaching staff	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 10	20 (11.4%)	4 (2.3%)	54 (30.7%)	78 (44.3%)
2	Between 11 and 20	10 (5.7%)	4 (2.3%)	49 (27.9%)	75 (42.6%)
3	Between 21 and 30	8 (4.6%)	4 (2.3%)	2 (1.1%)	2 (1.1%)
4	Between 30 and 40	2 (1.1%)	1 (0.5%)	11 (6.3%)	14 (8.0%)
5	41 and above	2 (1.1%)	0	5 (2.8%)	7 (4.0%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100%)**

The data in Table 4.7 presents the quantum of non-teaching staff. It is observed that 42% of the institutions (74) having non- teaching staff ranging from 11to 15, followed by 19.3% having between 16 to 20 non-teaching staff.

Table 4.7

Non-Teaching Staff Vs Institutions

S No	No. of Non-Teaching staff	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 5	5 (2.8%)	1 (0.6%)	17 (9.6%)	23 (13.1%)
2	Between 6 and 10	8 (4.6%)	3 (1.7%)	13 (7.4%)	24 (13.6%)
3	Between 11 and 15	13 (7.4%)	3 (1.7%)	58 (33.0%)	74 (42.0%)
4	Between 16 and 20	10 (5.7%)	4 (2.3%)	20 (11.4%)	34 (19.3%)
5	Between 21 and 25	4 (2.3%)	2 (1.1%)	8 (4.5%)	14 (8.0%)
6	26 and above	2 (1.1%)	-	5 (2.8%)	7 (4.0%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

The data in Table 4.8 presents the quantum of technical staff in the sample institutions. About 1/5th of the sample having technical staff ranging between 21 and 25, followed by one fourth of the sample with technical staff between 11 and 15.

Table 4.8

Technical Staff Vs Institutions

S No	No. of Technical Staff	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 5	4 (2.3%)	1 (0.6%)	6 (3.4%)	11 (6.3%)
2	Between 6 and 10	1 (0.6%)	0	0	1 (0.6%)
3	Between 11 and 15	9 (5.1%)	3 (1.7%)	32 (18.2%)	44 (25%)
4	Between 16 and 20	7 (4.0%)	2 (1.1%)	21 (11.9%)	30 (17.0%)
5	Between 21 and 25	10 (5.4%)	4 (2.3%)	22 (12.5%)	36 (20.5%)
6	Between 26 and 30	4 (2.3%)	2 (1.1%)	16 (9.1%)	22 (12.5%)
7	Between 31 and 50	4 (2.3%)	1 (0.6%)	19 (10.8%)	24 (13.6%)
8	51 and above	3 (1.7%)	0	5 (2.8%)	8 (4.5%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

4.3.5 Students Strength

The data in Table 4.9 reveals students strength at the time of survey. It is observed that in a majority 73(41.4%) of institutions the students strength is

below 50. On the other hand in 64 institutions (36.4%) students strength ranges between 101 and 150. Since, the institutions offer professional education, the quantum of students strength will be at minimum numbers.

Table 4.9

Student Strength Vs Institutions

S No	No. of Students	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 50	17 (9.6%)	5 (2.8%)	51 (29.0%)	73 (41.4%)
2	Between 51 and 100	7 (4.0%)	1 (0.6%)	12 (6.8%)	20 (11.4%)
3	Between 101 and 150	11 (6.3%)	7 (4.0%)	46 (26.1%)	64 (36.4%)
4	Between 151 and 200	3 (1.7%)	-	6 (3.4%)	09 (5.1%)
5	Above 201	4 (2.3%)	-	6 (3.4%)	10 (5.7%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

4.4 LIBRARY MANPOWER AND WORKING HOURS

4.4.1 Library Manpower

Library manpower, both professional and non-professional, has been displayed in Tables 4.10 and 4.11 respectively. It is seen from the Table 4.10 that all the libraries have professional staff which is a healthy sign. It is also

interesting to note that these institutions have more than one professional staff, although a majority of them fall under self-financing category (Table 4.2). While nearly two-thirds of the sample (116) has below five professional staff, on the other hand nearly one-fourth of the sample libraries have professional staff ranging between 6 and 10 as observed from Table 4.10.

Table 4.10

Professional Staff in Libraries Vs Institutions

S No	No. of Professional staff	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 5	16 (9.1%)	7 (4.0%)	93 (52.8%)	116 (65.9%)
2	Between 6 and 10	16 (9.1%)	4 (2.3%)	23 (13.1%)	43 (24.4%)
3	Between 11 and to 15	3 (1.7%)	-	-	3 (1.7%)
4	16 and above	7 (4.0%)	2 (1.1%)	5 (2.8%)	14 (8.0%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

The data in the Table 4.11 reveal the quantum of non-professional staff in the libraries. It is observed that two-thirds of the sample (67%) libraries have one non-professional staff and in 22 libraries (12.5%) no provision for the appointment of professional staff.

Table 4.11

Non-Professional Staff in Libraries Vs Institutions

S No	Non Professional Staff	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	One Non- Professional	23 (13.1%)	9 (5.1%)	86 (48.8%)	118 (67.0%)
2	Two Non -Professionals	15 (8.5%)	4 (2.3%)	14 (8.0%)	33 (18.8%)
3	Three Non -Professionals	3 (1.7%)	-	-	3 (1.7%)
4	Not Provided	1 (0.6%)	-	21 (11.9%)	22 (12.5%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

4.4.2 Library working hours

The working hours of the libraries in medical education institutions in Tamil Nadu are not uniform. While 58% of the surveyed libraries (102) work between 9 a.m. and 6 p.m only one library works between 8 a.m. to 12 midnight (i.e., Christian Medical College Library, Vellore).

Table 4.12

Library Working Hours Vs Institutions

S No	Working Hours	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Between 9 am and 6 pm	19 (10.8%)	10 (5.7%)	73 (41.4%)	102 (58.0%)
2	Between 8 am and 8 pm	20 (11.4%)	3 (1.7%)	41 (23.3%)	65 (36.9%)
3	Between 8 am and 10 pm	2 (1.1%)	-	6 (3.4%)	8 (4.5%)
4	Between 8 am and 12 midnight	1 (0.6%)	-	1 (0.6%)	1 (0.6%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

4.5 INFRASTRUCTURE FACILITIES

The infrastructure facilities in the libraries cover the provision of building, library furniture, fittings, availability of air–conditioner, research cubicles, building safety equipments such as fire extinguisher etc., the availability of these facilities have been examined and the data has been presented in Tables 4.13, 4.14 and 4.15.

The data in Table 4.13 and Figure 4.5 reveals the provision of library building. It is interesting to note that a majority of the libraries (72.7%) do not have a separate building and the libraries in these institutions are functioning as a part of the main building. On the contrary, about 48 libraries (27.3%)

have separate building exclusively for libraries. However, the respondent librarians asked to state the total area allotted for libraries, either in a separate building or a part of the main building. Accordingly the data has been presented in Table 4.14.

Table 4.13

Provision of Library Building Vs Institutions

S No	Library Building	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Separate building	11 (6.3%)	4 (2.3%)	33 (18.7%)	48 (27.3%)
2	Part of Building	31 (17.6%)	9 (5.1%)	88 (50.0%)	128 (72.7%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100.0%)**

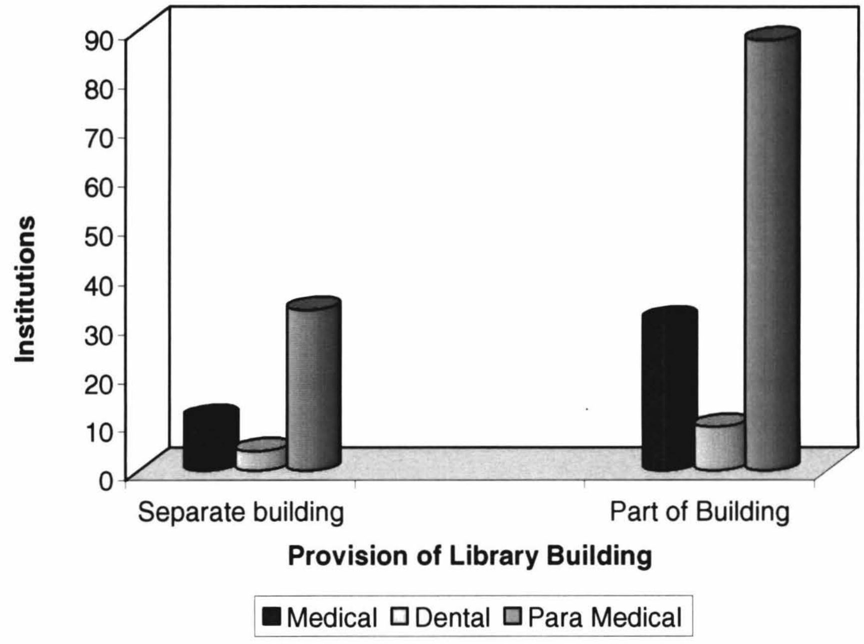


Figure 4.5 Provision of Library Building Vs Institutions

While 49 libraries (27.8%) have provided the building space for library between 1801-2400 sq.ft., 47 libraries (26.7%) has between 1200-1800 sq ft., On the whole, it is observed that the library space area has been distributed under 6 broad groupings as presented in Table 4.14 and Figure 4.6.

Table 4.14

Total area of library Vs Institutions

S No	Total area of library (Sq. ft)	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 1200 sq ft.	-	-	10 (5.7%)	13 (7.4%)
2	Between 1200 and 1800 sq ft.	13 (7.4%)	4 (2.3%)	30 (17.0%)	47 (26.7%)
3	Between 1801 and 2400 sq ft.	13 (7.4%)	4 (2.3%)	35 (19.8%)	49 (27.8%)
4	Between 2401 and 3000 sq ft.	8 (4.6%)	2 (1.1%)	22 (12.5%)	32 (18.2%)
5	Between 3001 and 3600 sq ft.	3 (1.7%)	1 (0.6%)	7 (4.0%)	11 (6.3%)
6	Above 3600 sq ft.	5 (2.8%)	2 (1.1%)	17 (9.7%)	24 (13.6%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.7%)**	**176 (100%)**

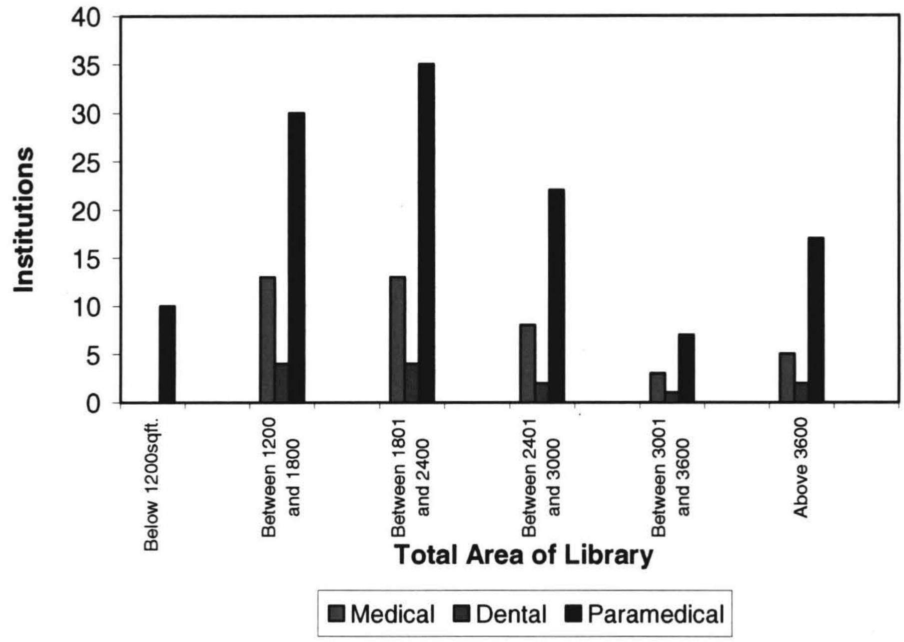


Figure 4.6 Total area of Library Vs Institutions

The availability of various infrastructure facilities in the libraries has been analysed in the Table 4.15 and Figure 4.7. Almost all the libraries have sufficient provision for furniture, lighting and reading hall which are essential for any library. On the other hand, 97.2% (171) have provided photocopying facility, followed by 107 libraries (60.8%) has building safety equipments which are very much needed in the case of any causality. Only 22 libraries (12.5%) have provision for research cubicles and 54 libraries (30.6%) have air-conditioning facility.

Table 4.15

Infrastructure Facilities Vs Institutions

S No	Infrastructure Facilities	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Furniture	42 (23.9%)	13 (7.4%)	121 (68.7%)	176 (100%)
2	Lighting	42 (23.9%)	13 (7.4%)	121 (68.7%)	176 (100%)
3	Reading Hall	42 (23.9%)	13 (7.4%)	121 (68.7%)	176 (100%)
4	Research Cubicles	11 (6.3%)	2 (1.1%)	9 (5.1%)	22 (12.5%)
5	Air-conditioning	20 (11.4%)	6 (3.4%)	28 (15.9%)	54 (30.6%)
6	Photocopying	42 (23.9%)	11 (6.3%)	118 (67.0%)	171 (97.2%)
7	Building safety equipment (Fire extinguisher etc.)	35 (19.9%)	7 (3.9%)	65 (36.9%)	107 (60.8%)

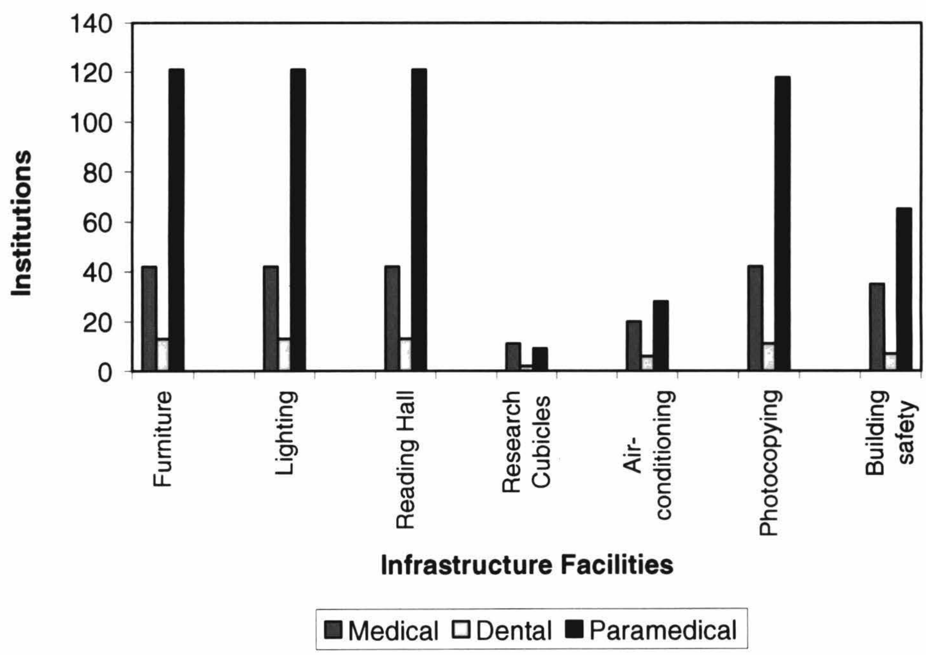


Figure 4.7 Infrastructure Facilities Vs Institutions

4.6 SOURCES OF FINANCE

Adequate financial provision is required for the collection building and also effective administration of libraries. There are number of channels from which libraries secure finance such as government grants, donations, self-financing management grants etc. In this survey the respondent librarians were asked to state the sources of revenue for their libraries and accordingly the data is presented in Table 4.16 and Figure 4.8.

Table 4.16

Distribution of Libraries by the Sources of Finance Vs Institutions

S No	Sources of Finance	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	State Government grant	19 (10.8%)	1 (0.6%)	5 (2.8%)	25 (14.2%)
2	Self Financing management grants	23 (13.1%)	12 (6.8%)	116 (66.0%)	151 (85.7%)
3	Donations/Endowments	9 (5.1%)	3 (1.7%)	29 (16.5%)	41 (23.3%)
4	Over due charges	5 (2.8%)	1 (0.6%)	10 (5.7%)	16 (9.1%)
5	Sale of old news papers	3 (1.7%)	1 (0.6%)	7 (4.0%)	11 (6.3%)
6	Photocopying charges	4 (2.3%)	1 (0.6%)	18 (10.2%)	23 (13.1%)
7	Membership fees	5 (2.8%)	1 (0.6%)	7 (4.0%)	13 (7.4%)

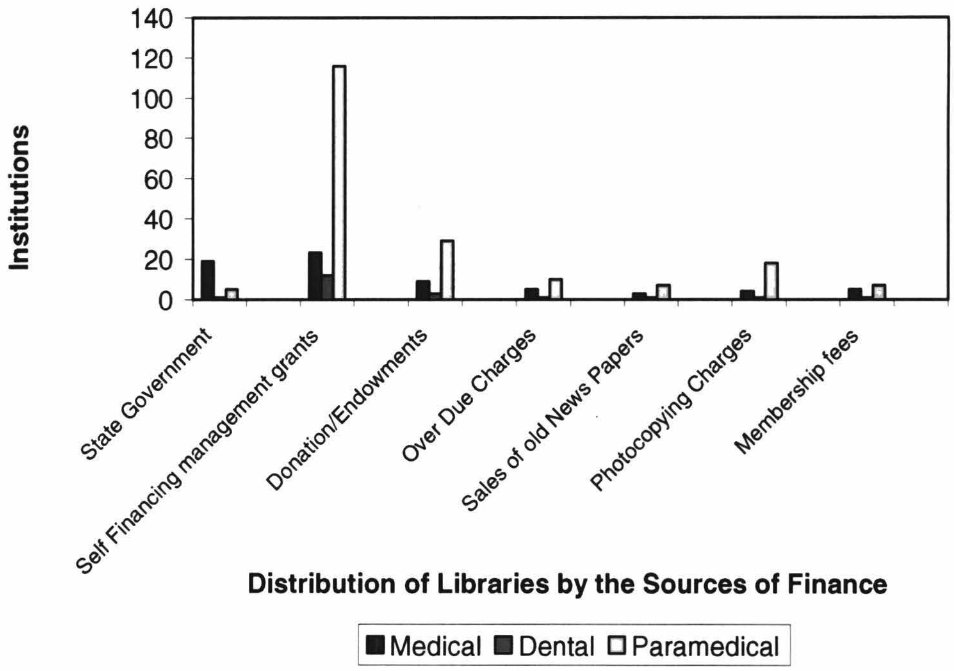


Figure 4.8 Distributions of Libraries by the Sources of Finance Vs Institutions

Since a majority of the institutions are private institutions which include self-financing colleges and private universities and hence they provide grants for their libraries. Therefore as seen from Table 4.16, it is found that 85.7% of libraries (151) are receiving grants from the management. This is followed by 41 (23.3%) libraries obtain grants through donations and endowments and 25 libraries (14.2%) receive grants from the state government. Added to this, a few institutions are getting some revenue through over due charges (9.1%), membership fees in 13 libraries (7.4%) and sale of old news papers (6.3%). On enquiry with the librarians, it was noticed that such revenue from the fine collection are used towards the development

of respective libraries in the form of infrastructure facilities and other developmental activities.

4.7 COLLECTION DEVELOPMENT

Building necessary information resources is a complex activity which needs proper planning. Normally a library will have a Library Committee to administer and monitor the policy decisions especially in the in the context of collection development. It is essential to draft collection development policy for every library.

In the survey it was found that a majority of the medical institutions in Tamil Nadu do not have either duly constituted Library Committee or Collection Development policy. The data in this regard has been presented in Table 4.17 and Figure 4.9.

Table 4.17

Library Committee and Collection Development Policy Vs Institutions

S No	Description	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Library Committee	5 (2.8%)	3 (1.7%)	12 (6.9%)	20 (11.4%)
2	Collection Development Policy	5 (2.8%)	2 (1.1%)	3 (1.7%)	10 (5.7%)

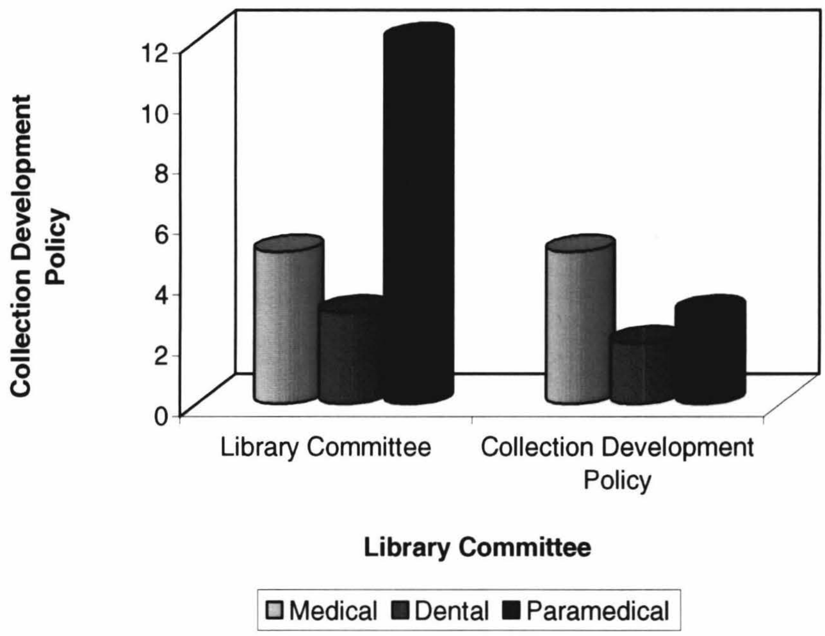


Figure 4.9 Library Committee and Collection Development Policy

The selection of books in a library is carried out by library committee, head of the institution, librarian, and faculty members, which generally results in the judicial selection of information materials. In other words, book selection shall not be vested in the control of one individual. Keeping this in mind, the investigator asked the respondent librarians to furnish the process and authority for book selection in their respective libraries. It is found in the survey that, in almost all the libraries head of the institutions and librarians are involved in the selection of books. On the other hand, in 121 libraries (68.8%) the head of the department involved and in above half of the libraries (89%) the faculty also involved.

Table 4.18

Authority of Book Selection Vs Institutions

S No	Description	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Library Committee	5 (2.8%)	3 (1.7%)	12 (6.9%)	20 (11.4%)
2	Head of the Department	14 (8.0%)	6 (3.4%)	101 (57.4%)	121 (68.8%)
3	Faculty	37 (21.0%)	10 (5.7%)	42 (23.9%)	89 (50.6%)
4	Librarian views considered	42 (23.8%)	13 (7.4%)	121 (68.8%)	176 (100%)
5	Head of the Institution	42 (23.8%)	13 (7.4%)	121 (68.8%)	176 (100%)

4.7.1 Mode of Book Purchase

Libraries practice various methods of book acquisition such as acquiring by quotations, directly from the appointed vendors, conducting book exhibitions in the library premises, purchase from local book shops and dealers, on approval basis. In the survey it was found that five different methods are in vogue, (Table 4.19 and Figure 4.10). While all the libraries adapt on approval basis, the purchase of books from local book shops (92.6%) and acquiring by appointing vendors (77.3%) has been noticed.

Table 4.19

Mode of Book Purchase Vs Institutions

S No	Description	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Directly from publishers	40 (22.7%)	11 (6.3%)	72 (41.0%)	123 (70.0%)
2	Appointing vendors	42 (23.8%)	13 (7.4%)	81 (46.1%)	136 (77.3%)
3	Organising Book Exhibition	42 (23.8%)	13 (7.4%)	47 (26.7%)	102 (58.0%)
4	Local Book Shops	42 (23.8%)	13 (7.4%)	108 (61.4%)	163 (92.6%)
5	On approval	42 (23.8%)	13 (7.4%)	121 (68.8%)	176 (100%)

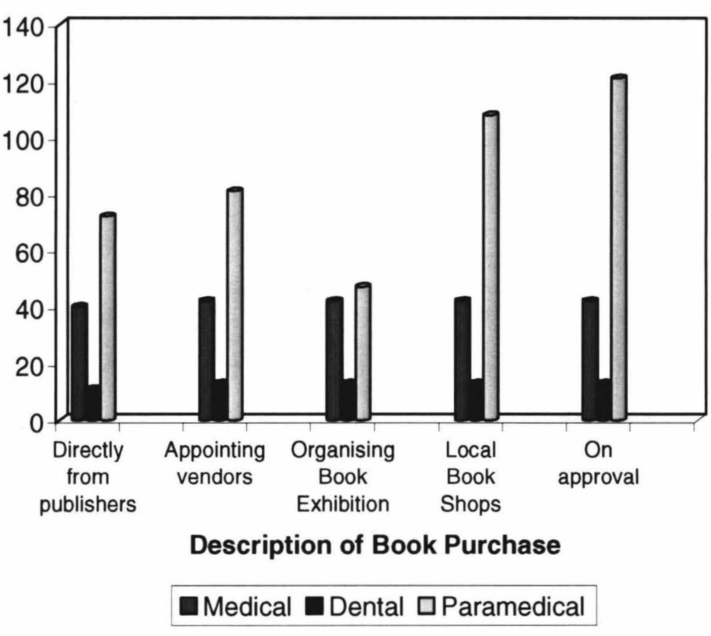


Figure 4.10 Mode of book purchase

4.7.2 Quantum of Book Collection

The data in Table 4.20 present the quantum of book collection in libraries under study. It is observed that in 50% of the libraries the collection is below 50001 and in 24.4% of the libraries the collection ranges between 5001 and 10,000.The collection of the books gone beyond 15000 volumes in many of the libraries. The reasons, probably, are that most of the libraries were established after 1990s and the cost of medical books is relatively high and hence with the limited budget, it may not be possible to buy large number of books. There is one library in the study (i.e., the Christian Medical College Library) that has collection of above 45000 and another library having 40 to 42 thousands (i.e., Madras Medical College Library) since the existence of these libraries are more than a century old.

Table 4.20

Number of Books Vs Institutions

S No	No. of Books	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 5000	10 (5.7%)	3 1.7%)	75 (42.6%)	88 (50.0%)
2	Between 5001 and 10000	6 (3.4%)	8 (4.5%)	36 (20.5%)	43 (24.4%)
3	Between 10001 and 15000	7 (4.0%)	1 (0.6%)	10 (5.7%)	18 (10.2%)
4	Between 15001 and 20000	6 (3.4%)	1 (0.6%)	-	7 (4.0%)
5	Between 20001 and 25000	5 (2.8%)	-	-	5 (2.8%)
6	Between 25001 and 30000	2 (1%)	-	-	2 (1%)
7	Between 30001 and 35000	3 (1.7%)	-	-	3 (1.7%)
8	Between 35001 and 40000	1 (0.6%)	-	-	1 (0.6%)
9	Between 40001 and 45000	1 (0.6%)	-	-	1 (0.6%)
10	Above 45001	1 (0.6%)	-	-	1 (0.6%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0%)**

4.7.3 Quantum of Periodicals

The study of medicine courses largely depends on periodicals, since periodicals are the sources of primary communication. The quantum of periodicals subscribed, both national and international, presented in

Tables 4.21 and 4.22. A majority of the libraries (83.5%) subscribed international journals below 25. Nearly 10% of the libraries subscribe to international periodicals numbering between 26 and 50. Only two libraries namely the Tamil Nadu Dr.M.G.R Medical University Library, Chennai and Christian Medical College Library, Vellore subscribe to above 126 international periodicals. On the contrary, the library subscribes less number of Indian periodicals as observed in Table 4.22. On enquiry with the librarians it was gathered that, the publication of Indian periodicals is comparatively small in number and hence the libraries subscribe to international periodicals due to the nature of the subject.

Table 4.21

Number of International Periodicals Vs Institutions

S No	No. of Periodicals	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 25	19 (10.8%)	8 (4.5%)	120 (68.2%)	147 (83.5%)
2	Between 26 and 50	11 (6.3%)	4 (2.3%)	1 (0.6%)	16 (9.1%)
3	Between 51 and 75	6 (3.4%)	1 (0.6%)	-	7 (3.4%)
4	Between 76 and 100	3 (1.7%)	-	-	3 (1.7%)
5	Between 101 and 125	1 (0.6%)		-	1 (0.6%)
6	Above 126	2 (1%)		-	2 (1%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0%)**

Table 4.22

Number of Indian Periodicals Vs Institutions

S No	No. of Periodicals	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Below 25	39 (22.2%)	13 (7.4%)	120 (68.2%)	172 (97.7%)
2	Between 26 and 50	2 (1%)	-	1 (0.6%)	3 (1.7%)
3	Above 51	1 (0.6%)	-	-	1 (0.6%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0 %)**

4.8 TECHNICAL PROCESSING

The data in Tables 4.23 to 4.25 reveals the nature of technical processing work done in the library, that is the classification scheme used, the catalogue code adapted and the implementation of subject headings list. More than 2/3rd of the libraries (69.3%) use Dewey Decimal Classification, of course, various editions. This is followed by Colon Classification in 39 libraries (22.0%) and Universal Decimal Classification in 14 libraries (8.0%). It is significant note that only one library adapting National Library of Medicine (USA) Classification scheme (i.e., Christian Medical College, Vellore) as revealed in Table 4.23 and Figure 4.11.

Table 4.23

Distribution of Libraries by the Scheme of Classification Followed Vs Institutions

S No	Scheme of Classification	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Colon Classification	9 (5.1%)	3 (1.7%)	27 (15.3%)	39 (22.0%)
2	Dewey Decimal Classification	29 (16.5%)	8 (4.5%)	84 (48.29%)	121 (69.3%)
3	Universal Decimal Classification	3 (1.1%)	2 (1.0%)	9 (5.1%)	14 (8.0%)
4	National Library of Medicine	1 (0.6%)	-	1 (0.6%)	2 (1.1%)
Total		**42 (22.7%)**	**13 (8.00%)**	**121 (69.3%)**	**176 (100%)**

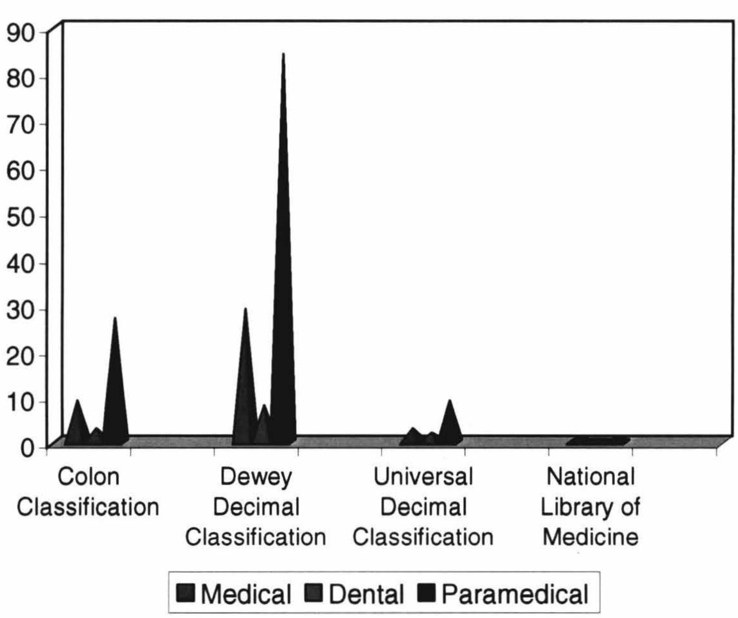


Figure 4.11 Distribution of libraries by the scheme of classification followed Vs Institutions

With regard to the catalogue code adapted, as shown in the Table 4.24 and Figure 4.12, that a majority of the libraries (73.3%) following AACR II, followed by 39 libraries (22.0%) Classified Catalogue Code. This analysis infers that the impact of Dr.S.R.Ranganathan on libraries of medical institutions in Tamil Nadu is still evident since 1/4th of the libraries are following Colon Classification and Classified Catalogue Code.

Table 4.24

Catalogue Code Adopted Vs Institutions

S No	Code of Cataloguing	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Classified Catalogue Code	9 (5.1%)	3 (1.7%)	27 (15.3%)	39 (22.0%)
2	Anglo American Cataloguing Rules I	2 (1%)	1 (0.6%)	5 (2.8%)	8 (4.5%)
3	Anglo American Cataloguing Rules II	31 (17.6%)	9 (5.1%)	89 (50.6%)	129 (73.3%)
Total		**42 (22.7%)**	**13 (8.00%)**	**121 (69.3%)**	**176 (100%)**

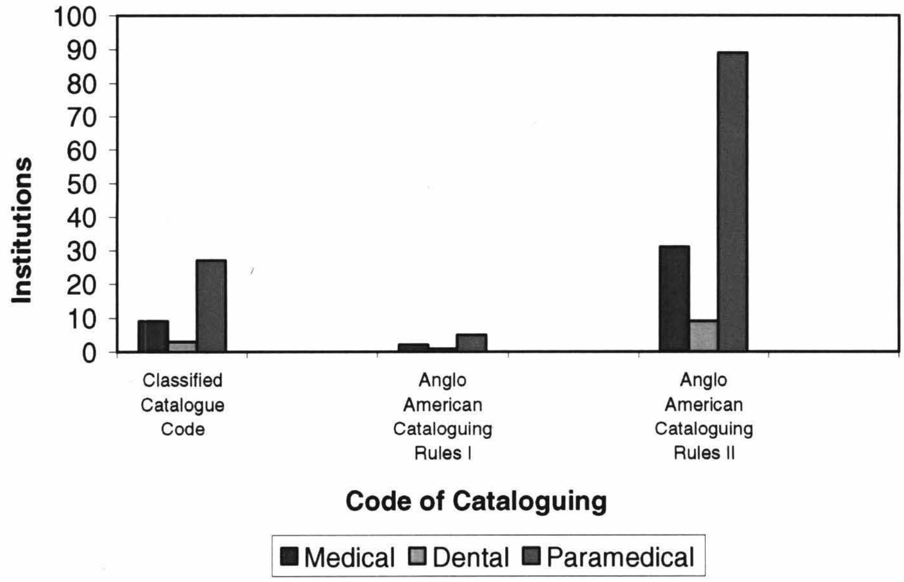


Figure 4.12 Catalogue Code adopted Vs Institutions

The data in Table 4.25 reveals the implementation of the subject heading lists. Sears' List of Subject Headings is followed in 121 libraries (69.3%) followed by 53 libraries (30.1%) use Library of Congress Subject Headings List. Significantly the Christian Medical College library, both medical and paramedical colleges, adapting NLM classification and Medical Subject Heading List (MeSH).

Table 4.25

Subject Headings List adopted Vs Institutions

S No	Subject Headings List	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Library of Congress Subject Headings List	12 (6.8%)	5 (2.8%)	36 (20.4%)	53 (30.1%)
2	Sears List of Subject Headings	29 (16.5%)	8 (4.5%)	84 (48.3%)	121 (69.3%)
3	Medical Subject Headings(MeSH)	1 (0.6%)	0	1 (0.6%)	2 (1%)
Total		**42 (22.7%)**	**13 (8.00%)**	**121 (69.3%)**	**176 (100%)**

4.9 INFORMATION SERVICES PROVIDED

The information services provided in the libraries under study have been broadly grouped as Traditional services, Documentation services and Computerised services and the data is shown in Table 4.26 and Figure 4.13, Table 4.27 and Figure 4.14, Table 4.28 and Figure 4.15, respectively. All the libraries provide both circulation and reference services. The provision of inter library loan hardly seen in dental libraries and other libraries do not

provide. With regard to the Documentation services, as observed from 4.27, nearly 3/4[th] of the libraries (73.3%) provide reprographic services. The other type of documentation services are provided by less than 1/3[rd] of the sample. On the contrary, a good number of libraries provide computerised services as seen in Table 4.28.

Table 4.26

Traditional Services Vs Institutions

S No	Traditional Services	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Circulation Service	42 (23.9%)	13 (7.4%)	121 (68.8%)	176 (100.0%)
2	Inter Library Loan	0	02 (1.1%)	0	2 (1.1%)
3	Reference Service	42 (23.9%)	13 (7.4%)	121 (68.8%)	176 (100%)

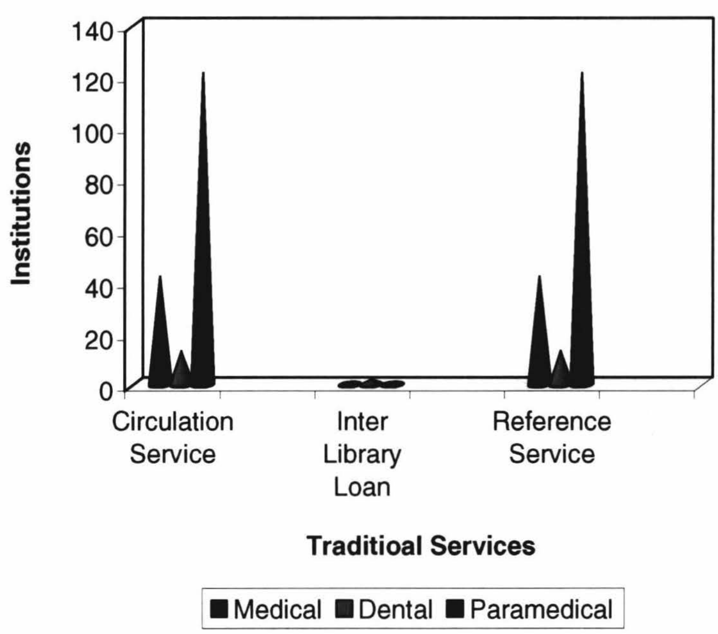


Figure 4.13 Traditional Services Vs Institutions

Table 4.27

Documentation Services Vs Institutions

S No	Documentation Services	Medical n=42	Dental n= 13	Paramedical n=121	Total n=176
1	Indexing Service	10 (5.7%)	1 (0.6%)	25 (14.2%)	36 (20.5%)
2	Abstracting Service	10 (5.7%)	1 (0.6%)	25 (14.2%)	36 (20.5%)
3	Current Awareness Service	15 (8.5%)	2 (1.1%)	36 (20.5%)	53 (30.1%)
4	Selective Dissemination of Information Service	15 (8.5%)	3 (1.7%)	44 (25.0%)	62 (35.2%)
5	Reprographic Services	31 (17.6%)	8 (4.5%)	90 (51.5%)	129 (73.3%)
6	Translation Service	7 (4.0%)	1 (0.6%)	21 (11.9%)	29 (16.5%)
7	Bibliographic Service	10 (5.7%)	1 (0.6%)	25 (14.2%)	36 (20.5%)
8	Document Delivery Service	7 (4.0%)	1 (0.6%)	19 (10.8%)	27 (15.3%)
9	Literature Search Service	10 (5.7%)	2 (1.1%)	12 (6.8%)	32 (18.2%)

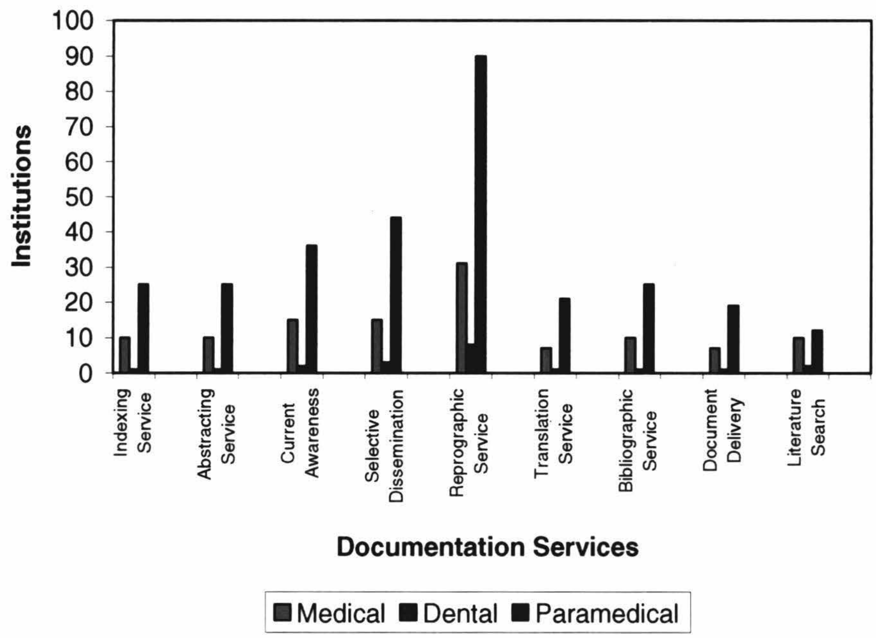


Figure 4.14 Documentation Services Vs institutions

Table 4.28

Computerised Services Vs Institutions

S No	Computerised Services	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Online Searching	18 (10.2%)	8 (4.5%)	44 (25.0%)	70 (39.8%)
2	e-Mail	38 (21.6%)	12 (6.8%)	113 (64.2%)	126 (71.6%)
3	e-Journal	16 (9.1%)	3 (1.7%)	8 (4.5%)	27 (15.3%)
4	e-Books	10 (5.7%)	2 (1.1%)	8 (4.5%)	20 (11.4%)
5	CDROM	11 (6.3%)	2 (1.1%)	25 (14.2%)	38 (21.6%)

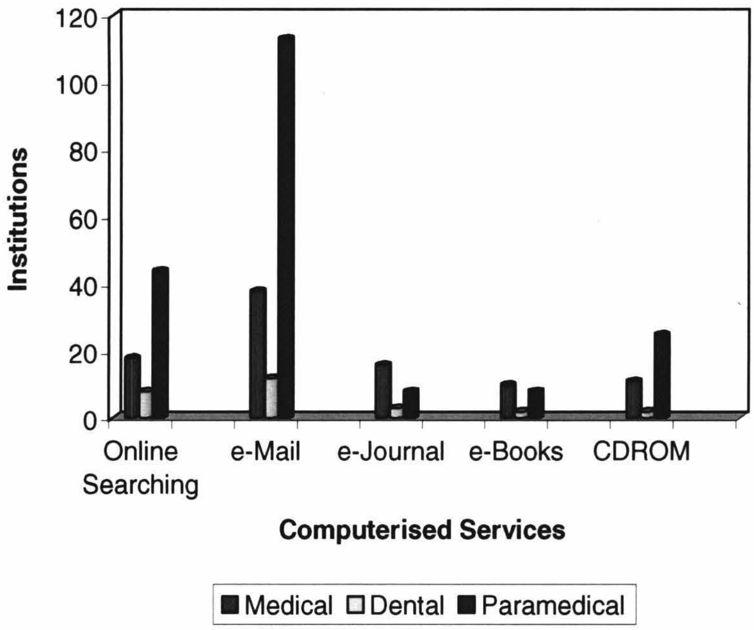


Figure 4.15 Computerised Services Vs Institutions

4.10 AVAILABILITY OF COMPUTER INFRASTRUCTURE

The data in Tables 4.29 to 4.30 reveals the availability of the computer facilities in the libraries surveyed. About 163 (93%) possess computers, of course, there exists variations from one library to another library with regard to the number and extent of configuration which was found in the sizable number of libraries.

The nature of the library, the extent of services provided, the quantum and nature of collection also influences the availability of computer infrastructure. Very few libraries have data server, application server and CD mirror server as observed from Table 4.30 and Figure 4.17.

Table 4.29

Availability of Computer Systems Vs Institutions

S No	Availability	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Yes	38 (21.6%)	12 (6.8%)	113 (64.2%)	163 (93.0%)
2	No	4 (2.3%)	1 (0.6%)	8 (4.5%)	13 (7.0%)
Total		**42 (24.4%)**	**13 (7.4%)**	**121 (68.2%)**	**176 (100%)**

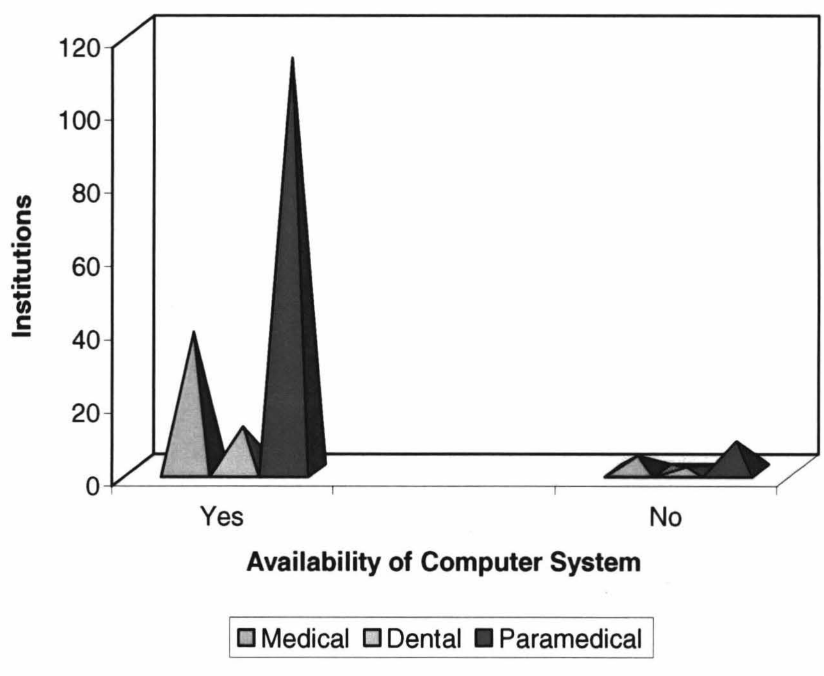


Figure 4.16 Availability of Computer Systems Vs Institutions

Table 4.30

Availability of Computer Servers Vs Institutions

S No	Servers	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Data Server	8 (4.5%)	1 (0.6%)	16 (9.1%)	25 (14.2%)
2	Application Server	2 (1%)	1 (0.6%)	7 (4.0%)	10 (5.7%)
3	CD Mirror Server	3 (1.7%)	0	9 (5.1%)	12 (6.8%)

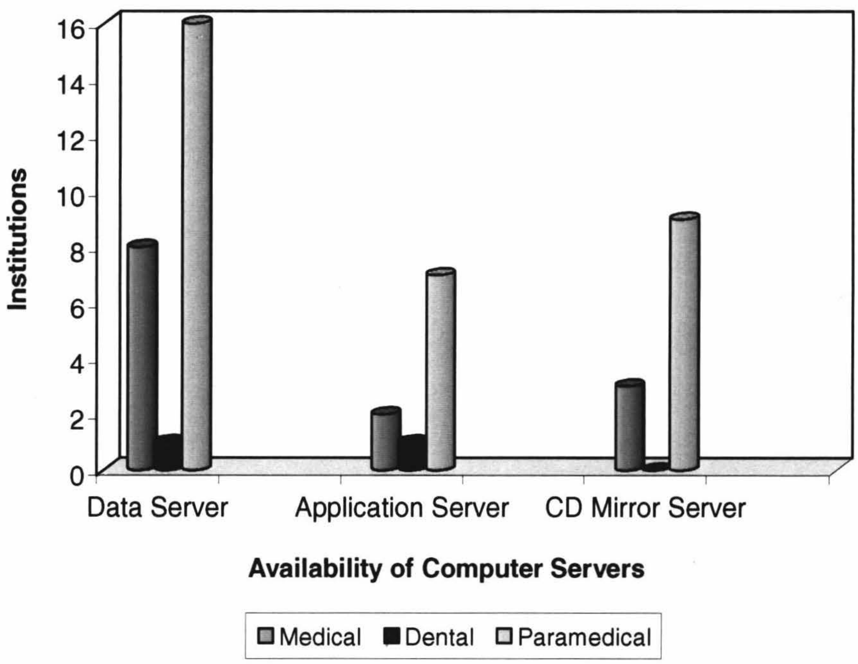


Figure 4.17 Availability of Computer Servers Vs Institutions

4.11 EXTENT OF LIBRARY AUTOMATION

It is seen in Table 4.31 and Figure 4.18 that out of 176 libraries, 67 libraries (38.1%) are not automated. While 6.3% of libraries (11) are fully automated, on the other hand, 55.7% (98) are partially automated. Although about 163 libraries have computer infrastructure, only 109 libraries are either fully automated or partially automated.

Table 4.31

Status of Library Automation Vs Institutions

S No	Extent of Automation	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Fully Automated	2 (1.1%)	1 (0.6%)	8 (4.5%)	11 (6.3%)
2	Partially Automated	25 (14.2 %)	8 (4.5%)	65 (37.0%)	98 (55.7%)
3	Not Automated	15 (8.5%)	4 (2.3%)	48 (27.3%)	67 (38.1%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0%)**

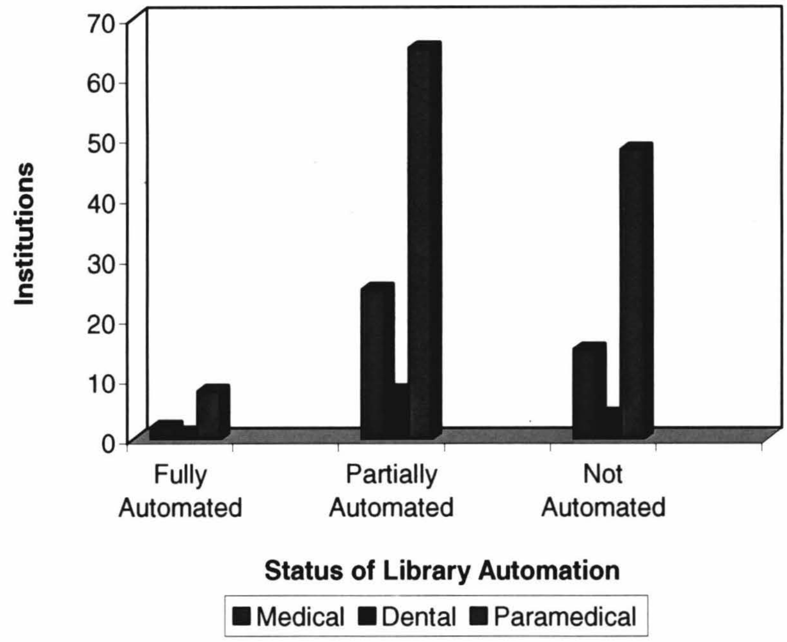


Figure 4.18 Status of Library Automation Vs Institutions

With regard to the areas of automation, the data in Table 4.32 reveals that a majority of the libraries (87) have designed and developed OPAC and about half of the libraries have done acquisition control.

Table 4.32

Areas of Automation Vs Institutions

S No	Areas of Automation	Medical n=27	Dental n=9	Paramedical n=73	Total n=109
1	Online Public Access Catalogue	23 (21.1%)	8 (7.3%)	56 (51.4%)	87 (79.8%)
2	Acquisition Control	18 (16.5%)	4 (3.7%)	35 (32.1%)	57 (52.3%)
3	Circulation Control	2 (1.8%)	1 (0.9%)	13 (12.0%)	16 (14.7%)
4	Serial Control	10 (9.2%)	6 (5.5%)	6 (5.5%)	22 (20.2%)

The data in Table 4.33 reveal the use of application software. It is observed that while 55 libraries (50.5%) use open source software, 1/4th of the libraries use in-house developed software.

Table 4.33

Application Software Used Vs Institutions

S No	Type of Software	Medical n=27	Dental n=9	Paramedical n=73	Total n=109
1	Commercial	3 (2.8%)	-	7 (6.4%)	10 (9.2%)
2	In-house	8 (7.3%)	2 (1.8%)	34 (31.2%)	44 (40.3%)
3	Open source	16 (14.7%)	7 (6.4%)	32 (29.4%)	55 (50.5%)

The application of Barcode in books, journals and identity cards is noticed in few libraries as revealed from Table 4.34 and Figure 4.19. About 21.0% of libraries use Barcoding in books. It may be stated that the libraries of medical education institutions in Tamil Nadu are slowly moving towards Barcode applications.

Table 4.34

Areas of Application of Barcode Vs Institutions

S No	Barcode Application	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Barcoding of Books	7 (4.0%)	3 (1.7%)	27 (15.3%)	37 (21.0%)
2	Barcoding of Journals	3 (1.7%)	3 (1.7%)	17 (9.7%)	23 (13.1%)
3	Barcoding of Identity Cards	2 (1.1%)	2 (1.1%)	18 (10.2%)	22 (12.5%)

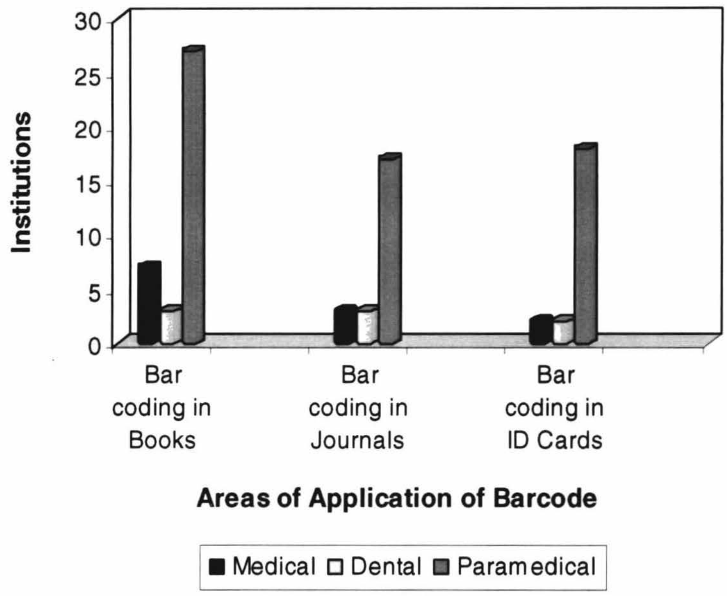


Figure 4.19 Areas of Application of Barcode Vs Institutions

4.12 NETWORK CONNECTIVITY

The impact of network connectivity and networking is very much seen in the libraries in recent years since the sharing of resources is made possible through some type of network connectivity such as LAN, WAN and INTRANET. It is observed from Table 4.35 and Figure 4.20, that 126 libraries in the survey have LAN and a few have either WAN or INTRANET connectivity.

Table 4.35

Network Connectivity Vs Institutions

S No	Network Connectivity	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	LAN	31 (17.6%)	10 (5.7%)	85 (48.3%)	126 (71.6%)
2	WAN	2 (1.1%)	0	3 (1.7%)	5 (2.8%)
3	Intranet	2 (1.1%)	0	3 (1.7%)	5 (2.8%)

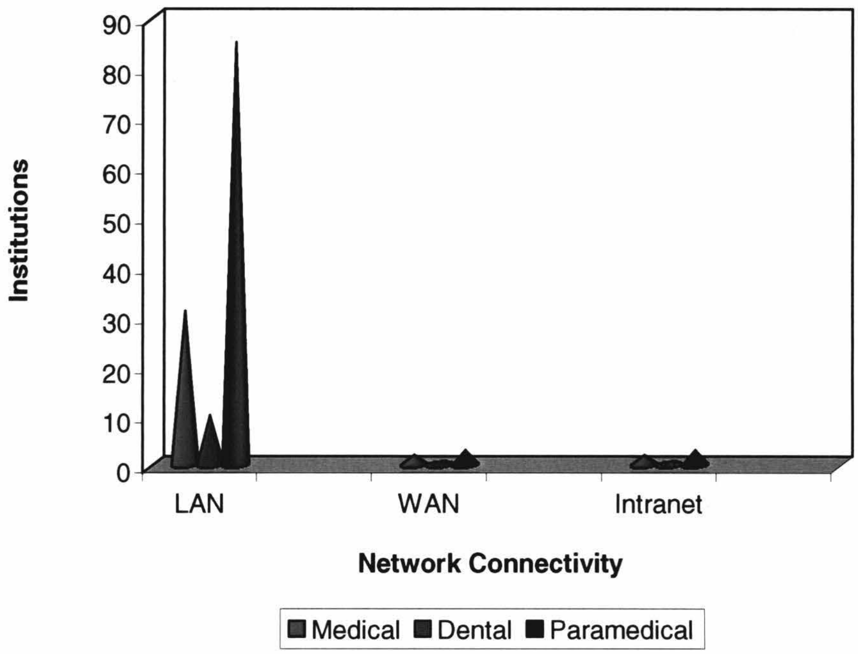


Figure 4.20 Network Connectivity Vs Institutions

Although libraries did automate their services in the context of e-resources, they are not subscribing to network connectivity. There is no specific network exclusively for medical education institutions like U.G.C Infonet, AICTE sponsored INDEST. However some of the paramedical institutions are acquiring resources and participating in certain networks such as INFLIBNET, MALIBNET, DELNET and ERNET as seen in Table 4.36.

Table 4.36

Participation in Networks Service Vs Institutions

S No	Name of Network	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	INFLIBNET	0	0	3 (1.7%)	3 (1.7%)
2	MALIBNET	0	0	2 (1.1%)	2 (1.1%)
3	DELNET	0	0	3 (1.7%)	4 (2.3%)
4	ERNET	0	0	3 (1.7%)	3 (1.7%)

Whatever the network connectivity, the accessibility of Internet connectivity many a times depend on bandwidth speed. It is observed from Table 4.37 that a majority of the libraries (60.7%) has 256 kbps bandwidth speed which is the minimum requirement for Internet connectivity. This is followed by 1/3rd of libraries (58) have to the speed of 512 kbps. Of course the remaining 13 libraries did not acquire computers as evident from the Table 4.29 and hence they do not have network connectivity.

Table 4.37

Internet Accessibility-Bandwidth Speed Vs Institutions

S.No	Internet Bandwidth	Medical n=38	Dental n=12	Paramedical n=113	Total n=163
1	256 Kbps	16 (9.8%)	6 (3.7%)	83 (47.2%)	105 (60.7%)
2	512 Kbps	22 (13.5%)	6 (3.7%)	30 (18.4%)	58 (35.6%)

The Internet connection can be had from different means such as VSAT, Dial up and Cable Network. It is seen from Table 4.38 that nearly 64% of the libraries have Internet connectivity through cable network, followed by 38 libraries with Dial up.

Table 4.38

Types of Internet Connection Vs Institutions

S No	Types of Internet Connection	Medical n=38	Dental n=12	Paramedical n=113	Total n=163
1	VSAT	6 (3.7%)	2 (1.2%)	12 (7.4%)	20 (12.3%)
2	Dial Up	5 (3.1%)	4 (2.5%)	29 (17.8%)	38 (23.4%)
3	Cable Network	31 (19.0%)	7 (4.3%)	67 (41.1%)	105 (64.4%)

The data in Table 4.39 provides the names of the organisations that provide Internet service. It is observed from the table that the libraries avail Internet service through either from Bharat Sanchar Nigam Limited (BSNL) or Reliance. A majority of the libraries (142) are having access through BSNL and 21 libraries through Reliance which is a private Internet service provider.

Table 4.39

Internet Service Provider (ISP) Vs Institutions

S No	Type of Internet Service Provider	Medical n=38	Dental n=12	Paramedical n=113	Total n=163
1	BSNL	36 (22.1%)	11 (6.7%)	95 (58.3%)	142 (87.1%)
2	Reliance	2 (1.2%)	1 (0.6%)	18 (11.0%)	21 (12.8%)

In the educational institutions most of the libraries provide Internet service either fee based or free. The amount of money charged for Internet access is very nominal on hourly basis ranging from 10 to 30 rupees. The data in Table 4.40 and Figure 4.21 reveals that a majority of the libraries (111) provide Internet service on free basis. This is an encouraging sign.

Table 4.40

Mode of Internet Services Provision Vs Institutions

S No	Internet Services	Medical n=38	Dental n=12	Paramedical n=113	Total n=163
1	Free	18 (11.0%)	8 (4.9%)	85 (52.1%)	111 (68.0%)
2	Fee Based	20 (12.3%)	4 (2.5%)	28 (17.2%)	52 (32.0%)

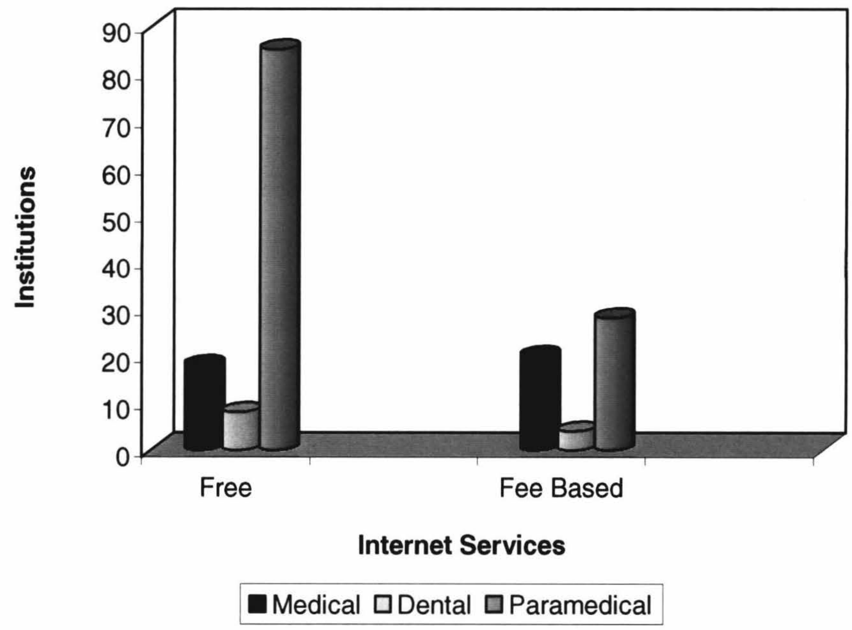


Figure 4.21 Modes of Internet Services Provision Vs Institutions

The data in Table 4.41 and Figure 4.22 reveals that only 8 libraries have developed home page for the library. This is a meager percentage. Although technology is influencing and competition among professional educational organisations exists, yet the libraries attached to medical

education institutions in Tamil Nadu did not reached the target in adapting and implementing ICT.

Table 4.41

Availability of Home Page Vs Institution

S No	Library	Home Page available	Home Page not available
1	Medical (n=38)	8 (4.9%)	34 (20.9%)
2	Dental (n=12)	3 (1.8%)	10 (6.1%)
3	Paramedical (n=113)	7 (4.3%)	114 (70.0%)
Total (n=163)		**18 (11.0%)**	**158 (97.0%)**

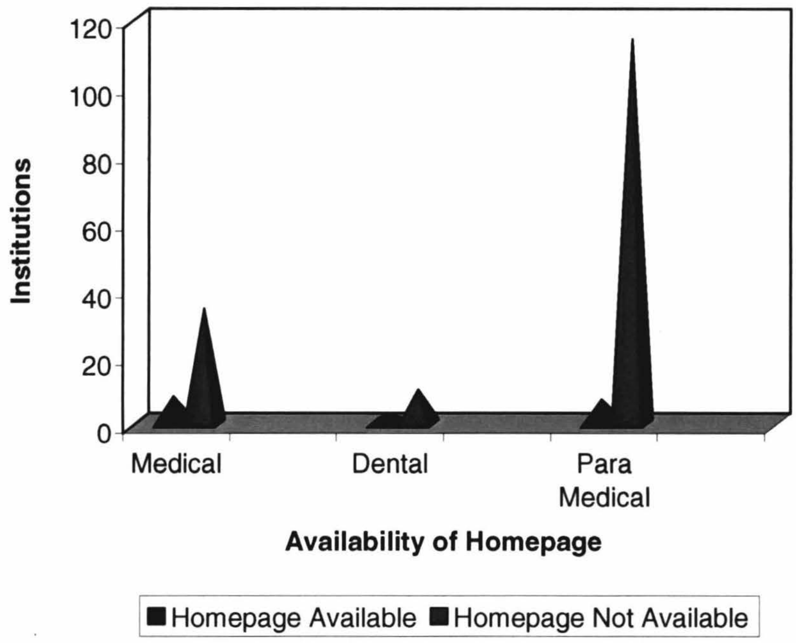


Figure 4.22 Availability of Home Page Vs Institution

4.13 IMPACT OF COMPUTER BASED INFORMATION SERVICES

The data in Table 4.42 presents librarians opinions about the relative value of computer based information services in comparison to manual services. In the survey it was found that all the librarians felt that computer based information services are better than manual services. The majority of the librarians favoured (76.2%) that "*user prefer to search e-resources*" is the main reason for medical libraries to go for computer based services.

However more than 2/3rd sample librarians (120) felt that the provision of computer based information service demands "*more IT trained library staff.*"

Table 4.42

Computer Based Information Services Vs Manual Services

S No	Computer Based Information Services Better than the manual services	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	User prefer to search e-resources	39 (22.2%)	10 (5.7%)	85 (48.3%)	134 (76.2%)
2	Users require orientation	12 (6.8%)	4 (2.3%)	23 (13.1%)	39 (22.2%)
3	Computer based information service has positive effect	19 (10.8%)	7 (4.0%)	38 (21.6%)	64 (36.4%)
4	IT trained library staff is required	15 (8.5%)	6 (3.4%)	99 (56.3%)	120 (68.2%)

4.14 ICT APPLICATIONS VS COLLECTION DEVELOPMENT POLICY

The impact of information and communication technology on collection development in the libraries under study has been analysed. Six different variables have been considered for this purpose. The respondent librarians' opinions are presented in Table 4.43.

Table 4.43

ICT Application affects Collection Development Policy Vs Institutions

S No	Application of ICT affects the Collection Development	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	ICT affects the regular budgeting provision	9 (5.1%)	2 (1.1%)	29 (16.5%)	40 (22.7%)
2	ICT takes major share from the budget	7 (4.0%)	1 (0.6%)	19 (10.8%)	27 (15.3%)
3	Operational costs are exceeding year by year	11 (6.3%)	1 (0.6%)	24 (13.6%)	35 (19.9%)
4	AMC cost of ICT products affect the collection development	6 (3.4%)	2 (1.1%)	24 (13.6%)	32 (18.2%)
5	Higher salaries	7 (4.0%)	1 (0.6%)	19 (10.8%)	27 (15.3%)
6	Balanced collection development	4 (2.3%)	1 (0.6%)	14 (8.0%)	19 (10.8%)

There is a positive opinion towards the ICT applications and the responses reveal that collection development policy will not be affected. Only a few percentages of the respondents have expressed and agreed to the

variables listed in Table 4.43. In other words there is a strong contention of the librarians that the application of ICT does not affect the collection development policy. This was further examined through Chi-square test for which the results are shown in Table 4.44. It is interesting to note that there is no significant relationship between the variables affecting collection development and the ICT applications among the medical libraries at 0.05 level since the calculated chi-square value (3.9156) is greater than the table value. As a corollary to the above test, the respondent librarians were further asked to offer their opinions that the impact of application of ICT does not affect the collection development policy. The results are shown in Table 4.45.

Table 4.44

Chi-square Test for the Reasons for Impact of ICT Affecting Collection Development

S No	Reasons for application of ICT affecting the collection development	Mean value	Chi-square
1	ICT affects the regular Budgeting provision	3.67	3.9156
2	ICT takes major share from the budget	3.45	
3	Operational costs are exceeding year by year	3.39	
4	AMC cost of ICT products affect the collection	3.53	
5	Higher salaries	3.45	
6	Balanced collection development	3.31	

Degrees of freedom = 5, Level of Significance 0.5616, >0.05 level not significant

The data in Table 4.45 enumerates the reasons that do not affect collection development with the impact of ICT on the libraries. Nearly $2/3^{rd}$ of the librarians 65.3% (115) stated that *"adequate recurring funds allocation made by the management"* by library every year and separate funds are provided for the purchase of ICT products (60.8%) and hence there is no effect on the collection development due to the application of ICT in the libraries under study.

Table 4.45

Application of ICT not Affecting the Collection Development

S No	Reasons for application of ICT not affecting the collection development	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Adequate funds are provided	25 (14.2%)	6 (3.4%)	60 (34.1%)	91 (51.7%)
2	Recurring fund allocation is made every year	29 (16.5%)	7 (4.0%)	79 (44.9%)	115 (65.3%)
3	Separate funds are provided only for the purchase of ICT products	26 (14.8%)	7 (4.0%)	74 (42.0%)	107 (60.8%)

Further in order to test the significance of the variables that do not affect the collection development the Chi-square test has been conducted and the results are shown in Table 4.46. It is found that there is no significant relationship between the variables not affecting the collection development and the application of ICT in libraries under study, since the Chi-square value (3.8182) is greater than table value at 0.05% level.

Table 4.46

Chi-square test for application of ICT not affecting the Collection Development

S No	Application of ICT not affecting the collection development	Mean value	Chi-square value
1	Adequate fund are provided	1.89	3.8182
2	Recurring fund allocation is made every year	2.09	
3	Separate funds are provided only for the purchase of ICT Products	2.02	

Level of significance -0.1482, 0.05 levels No significance

From the above analysis it is inferred that the application of ICT does not affect the collection development policy in the libraries under study in the event of current practices such as regular budget provision with adequate funds and the provision for the purchase of ICT products regularly.

4.15 STAFF ATTITUDE TOWARDS ICT APPLICATIONS

Staff attitude towards ICT applications have been listed in 11 variables and presented in Table 4.47 with variable codes. The summarised opinions of the library staff towards ICT applications in libraries has been analysed by using statistical tests such as Friedman test, Cluster analysis and ANOVA test. The data in Table 4.47 presents the results of Friedman test for identifying the differences between Mean Rank values towards the staff attitude on ICT applications.

Table 4.47

Friedman Test for Staff attitude towards ICT Applications in Libraries

S No	Variable code	Staff Attitude	Mean Rank	Chi-square value	P-value
1	SAIT1	ICT applications are to improve the quality of the LIS	5.90	10.261	0.417
2	SAIT2	ICT improve the efficiency of the library	5.90		
3	SAIT3	ICT uses to enhance the knowledge and expertise	5.80		
4	SAIT4	ICT application's uses are essential to improve the communication facilities	5.90		
5	SAIT5	ICT makes an integration within the organization	6.31		
6	SAIT6	ICT application improves the status of the library and information Centre	6.31		
7	SAIT7	ICT reduces the work load	5.74		
8	SAIT8	ICT takes over the traditional way of information handling in the libraries and Information Centre	5.86		
9	SAIT9	ICT uses often disturb the routine work of the library	5.67		
10	SAIT10	ICT application is helpful to obtain the right information at the right time in the right place at the right cost	6.31		
11	SAIT11	ICT application will not spoil the image of Library	6.31		

It is observed from the Friedman test that there is no significant difference between mean rank of the variables representing staff attitude towards ICT applications in libraries, since the P Value is greater at 0.5 percentages and there is no significant importance. In other words the

respondents have attached equal importance to all the variables since the mean rank value is above 5 as shown in Table 4.47. Further the summarised agree and disagree frequencies among librarians of various categories of libraries are shown in Table 4.48.

Table 4.48
Attitude towards ICT applications (Agree / Disagree frequencies)

S No	Variables	Medical n=42		Dental n=13		Paramedical n=121		Total	
		Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
1	ICT applications are to improve the quality of the LIS	40 (22.7%)	2 (1.1%)	12 (6.8%)	1 (0.6%)	111 (63.1%)	10 (5.7%)	163	13
2	ICT improve the efficiency of the library	40 (22.7%)	2 (1.1%)	12 (6.8%)	1 (0.6%)	111 (63.1%)	10 (5.7%)	163	13
3	ICT uses to enhance the knowledge and expertise	39 (22.2%)	3 (1.7%)	12 (6.8%)	1 (0.6	109 (61.9%)	12 (6.8%)	160	16
4	ICT application's uses are essential to improve the communication facilities	40 (22.7%)	2 (1.1%)	12 (6.8%)	1 (0.6%)	111 (63.1%)	10 (5.7%)	163	13
5	ICT makes an integration within the organization	42 (23.9%)	0	13 (7.4%)	0	121 (68.8%)	0	176	0
6	ICT application improves the status of the library and information Centre	42 (23.9%)	0	13 (7.4%)	0	121 (68.8%)	0	176	0
7	ICT reduces the work load	37 (21.0%)	5 (2.8%)	12 (6.8%)	1 (0.6%)	111 (63.1%)	10 (5.7%)	160	16
8	ICT takes over the traditional way of information handling in the libraries and Information Centre	37 (21.0%)	5 (2.8%)	12 (6.8%)	1 (0.6%)	111 (63.1%)	10 (5.7%)	160	16
9	ICT uses often disturb the routine work of the library	2 (1.1%)	40 (22.7%)	1 (0.6%)	12 (6.8%)	10 (5.7%)	111 (63.1%)	13	163
10	ICT application is helpful to obtain the right information at the right time in the right place at the right cost	42 (23.9%)	0	13 (7.4%)	0	121 (68.8%)	0	176	0
11	ICT application will not spoil the image of Library	42 (23.9%)	0	13 (7.4%)	0	121 (68.8%)	0	176	0
	Total							**1686**	**250**

Further it was thought appropriate to apply cluster analysis for the staff attitude towards ICT applications. In the dendrogram (Figure 4.23) at 20% level 3 clusters have been formed.

HIERARCHICAL CLUSTER ANALYSIS

Dendrogram using Average Linkage (Between Groups)

Rescaled Distance Cluster Combine

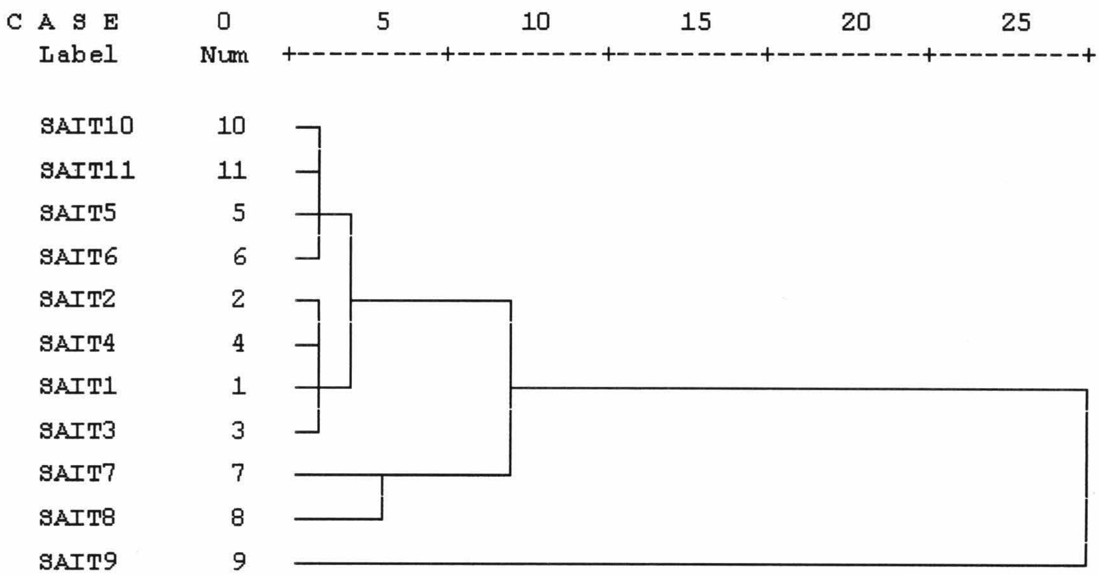


Figure 4.23 Cluster Analysis for the Staff attitude towards ICT applications

The variables in cluster one are shown in Table 4.49. In cluster I, 8 variables have been grouped and the agree and disagree ratio for these variables are 22:1, which reveals a higher degree of positive attitude among the librarians towards ICT applications. Hence this cluster has been named as "*Higher degree of positive attitude towards ICT applications.*"

Table 4.49

Higher Degree of Positive Attitude towards ICT applications

S No	Variable Code	Description	Agree	Disagree
1	SAIT 10	ICT application is helpful to obtain the right information at the right time in the right place at the cost	176	0
2	SAIT 11	ICT application will not spoil the image of Library	176	0
3	SAIT 5	ICT makes an integration within the organization	176	0
4	SAIT 6	ICT application improves the status of the library and information Centre	176	0
5	SAIT 2	ICT improve the efficiency of the library	163	13
6	SAIT 4	ICT application's uses are essential to improve the communication facilities	163	13
7	SAIT 1	ICT applications are to improve the quality of the LIS	163	13
8	SAIT 3	ICT uses to enhance the knowledge and expertise	160	16
Total			1190	55

Agree = 1190

Agree ratio = 1190/176 = 6.76

Cluster Centre = 6.76:0.31

Disagree = 55

Disagree ratio = 55/176 = 0.31

Agree and Disagree ratio = 22:1

In the cluster II, two variables have been grouped as shown in Table 4.50. The agree and disagree ratio is 11:1, which reveals a positive attitude towards ICT applications.

Table 4.50

Positive Attitude towards ICT applications

S No	Variable Code	Description	Agree	Disagree
1	SAIT 7	ICT reduces the work load	160	16
2	SAIT 8	ICT takes over the traditional way of information handling in the libraries and Information Centre	160	16
Total			320	32

Agree = 320 Disagree = 32

Agree ratio = 320/176 =1.9 Disagree ratio = 32/176 = 0.18

Cluster Centre = 1.9:0.18 Agree and Disagree ratio = 11:1

In the cluster III, only one variable as shown in Table 4.51, namely "*ICT used often disturb the routine work of the library*" has been formed in a separate cluster with a higher rate of disagreement with this variable (SAIT 9), since the agree and disagree ratio is 1:13.

Table 4.51

Attitude towards IT applications

S No	Variable code	Description	Agree	Disagree
1	SAIT 9	ICT uses often disturb the routine work of the library	13	163
Total			**13**	**163**

Agree = 13 Disagree = 163

Agree ratio = 13/176 =0.07 Disagree ratio = 163/176 = 0.9

Cluster Centre =0.07:0.9 Agree and Disagree ratio =1:13

Further ANOVA test has been conducted to gauge the overall opinion about the staff attitude towards ICT applications in different categories of management of libraries. The results of the ANOVA test are shown in Table 4.52.

Table 4.52

ANOVA Test for staff attitude towards ICT applications in libraries (Among Government, Self financing and Private Universities)

S No	Source	DF	Sum of squares	Mean squares	F Value	P value
1	Between groups	2	1.51	0.75	0.098	0.906
2	Within groups	173	1337.03	7.72	-	

It is seen from the Table 4.52 that, since P value is greater than table value at 0.5 level, there is no significant difference between category of managements with respect to the overall opinion of the staff attitude towards ICT applications in libraries.

Another ANOVA test has conducted among the subject categories such as Medical, Dental and Paramedical libraries and the results are shown in Table 4.53.

Table 4.53

ANOVA Table for the for overall opinion about the staff attitude towards ICT applications in libraries (Among Medical, Dental and Paramedical institutions)

S No	Source	DF	Sum of squares	Mean squares	F ratio	P value
1	Between groups	2	15.1170	7.5585	0.9585	0.3859
2	Within groups	141	1111.8761	7.8856		

It is observed from the Table 4.53 that, since P value is greater than table value at 0.5 level there is no significant difference between libraries of Medical, Dental and Paramedical with respect to the overall opinion of the staff attitude towards ICT applications in libraries.

4.16 REASONS FOR POOR APPLICATIONS OF ICT IN LIBRARIES

In the survey it was noticed that, although 163 libraries have computer facilities, a majority of them are not automated (Table 4.31). Therefore the librarians were asked to identify the reasons for poor ICT applications. Accordingly 9 variables were identified and the responses were elicited. Based on the opinions, certain statistical analysis techniques were applied such as Friedman Test, Cluster analysis and ANOVA Test.

The data in Table 4.54 presents the Friedman Test results for identifying the difference between the mean rank values towards the staff

opinion towards poor ICT applications. Since P value is less than 0.1, there is significant difference between mean rank values towards reasons for poor ICT applications in libraries.

Table 4.54

Friedman Test for Significant difference between Mean Rank towards Staff attitude towards Poor ICT Applications in Libraries

S No	Variable code	Reasons for poor IT application	Mean Rank	Chi-Square Value	P Value
1	PRIT1	Insufficient funds	7.28	208.849	0.000
2	PRIT2	Lack of adequate trained staff in ICT application	3.66		
3	PRIT3	Library professionals are not interested in adoption in the ICT application	3.90		
4	PRIT4	Lack of coordination	4.67		
5	PRIT5	Inability to absorb recurring Costs	5.55		
6	PRIT6	The library professionals are not interested to the learning ICT application	4.79		
7	PRIT7	Lack of professional recognition	4.91		
8	PRIT8	In accurate expectations of Information Technology	4.80		
9	PRIT9	Lack of co-ordinate in the authorities	5.43		

Further the summarised agree and disagree frequencies among libraries representing different categories are shown in Table 4.55. Since the variables represents sizable numbers it was thought appropriate to apply cluster analysis.

HIERARCHICAL CLUSTER ANALYSIS

Dendrogram using Average Linkage (Between Groups)

Rescaled Distance Cluster Combine

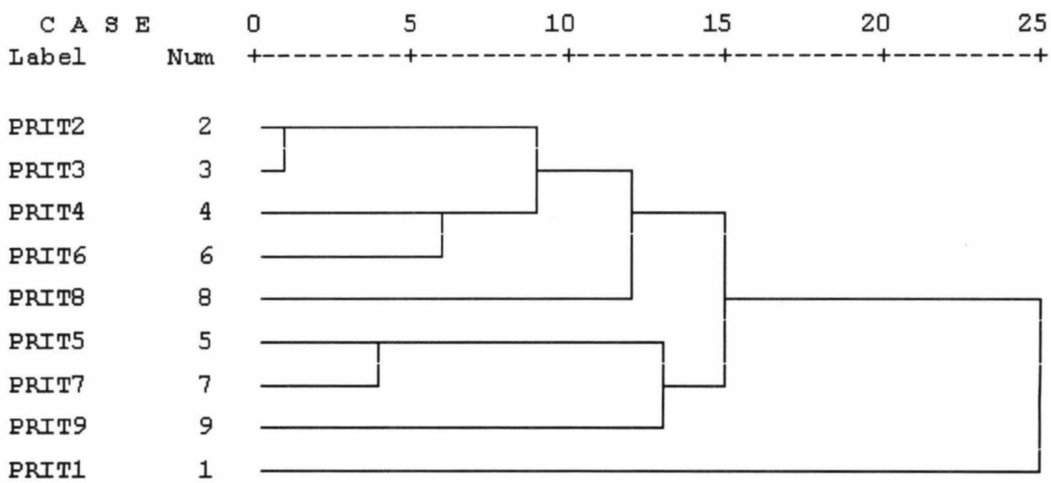


Figure 4.24 Cluster Analysis for the Reasons for ICT applications

From the dendrogram (Figure 4.24), it is observed that at 52% level, three clusters have been formed.

Table 4.55

Reasons for poor ICT applications in Library (Agree / Disagree ratio)

S No	Reasons for poor ICT application	Medical n=42		Dental n=13		Paramedical n=121		Total	
		Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree
1	Insufficient funds	29 (16.5%)	13 (7.4%)	11 (6.3%)	2 (1.1%)	100 (56.8%)	21 (11.9%)	140	36
2	Lack of adequate trained staff in ICT application	0	42 (23.9%)	0	13 (7.4%)	0	121 (68.8%)	176	0
3	Library professionals are not interested in adoption in the ICT application	4 (2.3%)	38 (21.6%)	0	13 (7.4%)	5 (2.8%)	116 (65.9%)	167	9
4	Lack of coordination	8 (4.5%)	34 (19.3%)	2 (1.1%)	11 (6.3%)	22 (12.5%)	99 (56.3%)	144	32
5	Inability to absorb recurring Costs	17 (9.7%)	25 (14.2%)	5 (2.8%)	8 (4.5%)	47 (26.7%)	74 (42.0%)	107	69
6	The library professionals are not interested to the learning ICT application	8 (4.5%)	34 (19.3%)	3 (1.7%)	10 (5.7%)	30 (17.0%)	91 (51.7%)	135	41
7	Lack of professional recognition	11 (6.3%)	31 (17.6%)	3 (1.7%)	10 (5.7%)	30 (17.0%)	91 (51.7%)	132	44
8	In accurate expectations of Information Technology	8 (4.5%)	34 (19.3%)	3 (1.7%)	10 (5.7%)	28 (15.9%)	93 (52.8%)	137	39
9	Lack of co-ordinate in the authorities	17 (9.7%)	25 (14.2%)	4 (2.3%)	9 (5.1%)	45 (25.6%)	76 (43.1%)	110	66
		Total						**1248**	**336**

In the cluster 1, five variables have been grouped as presented in Table 4.56.

Table 4.56

Primary Reasons for Poor ICT applications

S No	Variable Code	Description	Disagree	Agree
1	PRIT 2	Lack of adequate trained staff in ICT application	176	0
2	PRIT3	Library professionals are not interested in adoption in the ICT application	167	9
3	PRIT4	Lack of coordination	144	32
4	PRIT6	The library professionals are not interested to the learning ICT application	135	41
5	PRIT8	In accurate expectations of Information Technology	137	39
Total			759	121

Agree = 759

Disagree = 121

Agree ratio = 759/176 = 4.3

Disagree ratio = 121/176 = 0.68

Cluster Centre = 4.3: 0.68

Agree and Disagree ratio = 6:1

It is observed from the Table 4.56 that the agree and disagree ratio for these variables are 6:1 which reveals that these variables formed primary reasons for poor ICT applications of ICT in the libraries under study. Therefore this cluster has been named as *"Primary reasons for poor ICT applications."*

In the second cluster, 3 variables have been formed. The agree and disagree ratio is 2:1 as shown in Table 4.57. Since there is a same opinion among the librarian's on these variables, this cluster has been named as a "*Secondary reasons for poor ICT applications*"

Table 4.57

Secondary Reasons for Poor IT applications

S No	Variable Code	Description	Disagree	Agree
1	PRIT 5	Inability to absorb recurring Costs	107	69
2	PRIT7	Lack of professional recognition	132	44
3	PRIT9	Lack of coordination in the authorities	110	66
Total			349	179

Agree = 349 Disagree = 179

Agree ratio = 349/176 = 1.98 Disagree ratio = 179/176 = 1.01

Cluster Centre = 1.98: 1.01 Agree and Disagree ratio = 2:1

In the III cluster only one variable has been formed namely "*In sufficient fund*" (PRIT 1). The agree and disagree ratio is 4:1, which reveals that one fourth of the sample of the librarians are not agreeing for the lack of funds as shown in Table 4.58. This finding supports the impact of ICT on collection development where in the librarians expressed adequate flow of

funds. Therefore the lack of funds is not only the major reason for the poor application of ICT in the libraries.

Table 4.58

Tertiary Reason for Poor ICT applications

S No	Variable Code	Description	Agree	Disagree
1	PRIT 1	Insufficient funds	140	36
Total			**140**	**36**

Agree = 140
Agree ratio = 140/176 = 0.79
Cluster Centre = 0.79:0.20

Disagree = 36
Disagree ratio = 36/176 = 0.20
Agree and Disagree ratio = 4:1

Further the ANOVA test has been conducted to measure the degree of significance of the staff attitude towards poor ICT applications among Government, Self-financing and Private universities. The results are shown in Table 4.59.

Table 4.59

ANOVA Table for Poor Application of ICT in Libraries (Among Government, Self-Financing and Private universities)

S No	Source	DF	Sum of squares	Mean squares	F ratio	P value
1	Between groups	2	1.5046	0.7523	0.1183	0.888
2	Within groups	173	1099.7454	6.3569		

It is seen from the Table 4.59, that since P value is greater than 0.5, there is no significant difference between categories of libraries with respect to reasons for the overall opinion about the staff attitude towards the poor ICT applications in libraries.

Similarly ANOVA test is also applied to measure the significance at the overall opinion about the reasons of poor ICT applications among Medical, Dental and Paramedical institutions (Table 4.60).

Table 4.60

ANOVA Table for poor application of IT in libraries (Among Medical, Dental and Paramedical Libraries)

S No	Source	DF	Sum of squares	Mean squares	F ratio	P value
1	Between groups	2	2.8033	1.4016	0.2137	0.8079
2	Within groups	141	924.9467	6.5599		

It is seen from the Table 4.60 that since P value is greater than 0.5, there is no significant difference between Medical, Dental and Paramedical libraries with respect to the overall opinion about the staff attitude towards the reasons for the poor ICT applications in libraries.

4.17 PARTICIPATION IN LIBRARY CONSORTIA

In the present digital environment, library consortia have gained momentum in developing countries like India in general and Tamil Nadu in

particular. In India there exist consortia for academic libraries namely U.G.C. Infonet and INDEST for engineering libraries. But there are no active consortia for medical libraries, although HELLNET consortia for health science libraries and information network exists in Bangalore. There is no consortia in Tamil Nadu for medical libraries and therefore the respondent librarians were asked to state their awareness about the existence of library consortia.

Table 4.61

Awareness about Library Consortia

S No	Opinion	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Yes	42 (23.9%)	13 (7.4%)	115 (65.3%)	170 (96.6%)
2	No	0 (0%)	0 (0%)	6 (3.4%)	6 (3.4%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0%)**

It is found from the Table 4.61 that a majority of the librarians 170 (96.6%) are aware about the library consortia. Further the respondents were asked to state their willingness to join consortia for medical libraries and responses are shown in Table 4.62.

Table 4.62

Willingness to join Library Consortia

S No	Opinion	Medical n=42	Dental n=13	Paramedical n=121	Total n=176
1	Yes	40 (22.7%)	13 (7.4%)	111 (63.1%)	164 (93.2%)
2	No	2 (1.1%)	-	10 (5.7%)	12 (6.8%)
Total		**42 (23.9%)**	**13 (7.4%)**	**121 (68.8%)**	**176 (100.0%)**

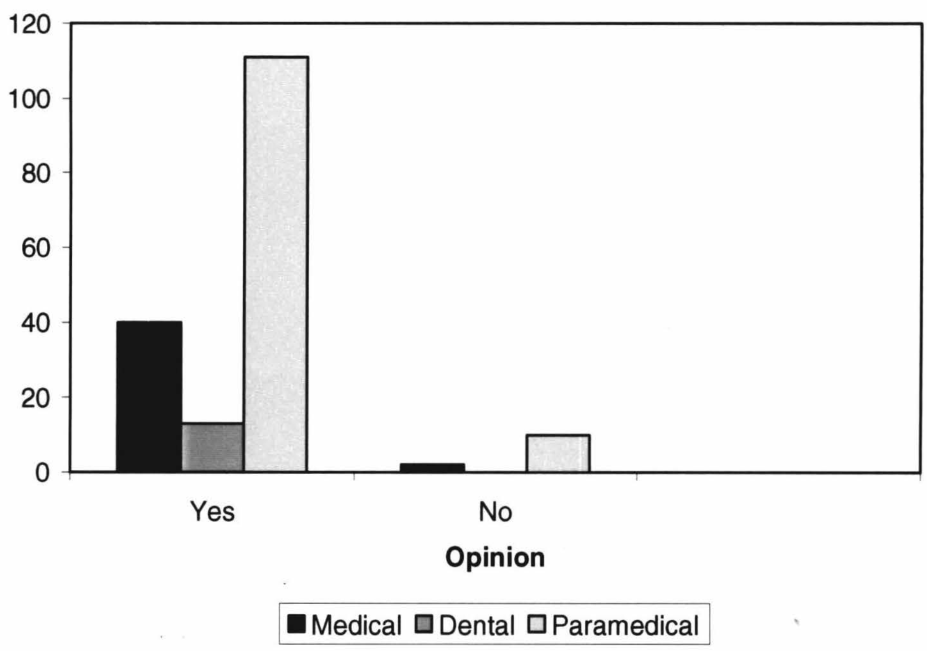


Figure 4.25 Willingness to join Library Consortia

From the Table 4.62, it is found that 93.2% respondents are willing to join consortia. However 10 respondents of paramedical libraries and 2 medical libraries did not have any interest to join consortia. It is interesting to note that all the dental libraries are willing to join the Consortia.

The data in Table 4.63 analyses the reasons for joining consortia. It is observed that a majority of the librarians (155) felt that the main reasons for joining consortia are to "*saving in the cost of the journals*", followed by "*to participate in inter library loan*" (154) as the first and second ranks respectively.

Table 4.63

Reasons for Joining the Consortia

S No	Reasons for Joining the Consortia	Medical	Dental	Paramedical	Total	Rank
1	Participating in Inter Library Loan	37 (21.0%)	12 (6.8%)	105 (59.7%)	154 (87.5%)	2
2	Sharing of expertise	38 (21.6%)	10 (6.7%)	102 (58.0%)	150 (85.2%)	4
3	Saving the cost of journals	37 (21.0%)	13 (7.4%)	105 (59.7%)	155 (88.1%)	1
4	Co-operative catalogue	35 (19.9%)	11 (6.3%)	90 (51.1%)	136 (77.3%)	5
5	Co-operative collection development	35 (19.9%)	11 (6.3%)	107 (60.8%)	153 (86.9%)	3

Further responses were analysed in 5 point scale and the WAM value have been derived as shown in Table 4.64. Accordingly the first 3 reasons with WAM values are as follows:

1. Saving the cost of the journals (4.48)
2. Sharing the expertise (4.44)
3. Participating in Inter library loan (4.33)

Table 4. 64

WAM Test for Reasons for Joining the Consortia

S No	Reasons for Joining the Consortia	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	WAM	Rank
1	Participating in Inter Library Loan	89 (445%)	65 (200%)	16 (48%)	4 (8%)	2 (2%)	4.33	3
2	Saving the cost of Journals	120 (600%)	30 (120%)	20 (60%)	3 (6%)	3 (3%)	4.48	1
3	Sharing of expertise	110 (550%)	45 (180%)	15 (45%)	1 (2%)	5 (5%)	4.44	2
4	Co-operative catalogue	46 (230%)	90 (360%)	34 (102%)	2 (4%)	4 (4%)	3.97	5
5	Co-operative collection development	38 (190%)	115 (460%)	17 (51%)	5 (10%)	1 (1%)	4.04	4

The reasons for not joining consortia, [though the number of libraries are minimum (12)], has been analysed and presented in Table 4.65. "*Inadequate staff and funds*" are the major reasons wherein all the 12 librarians expressed, followed by 10 librarians felt the "*lack of cooperation from the management*" is the another reason.

Table 4.65

Reasons for Not Joining the Consortia

S No	Reasons for Not Joining the Consortia	Medical n=2	Dental n=0	Paramedical n=10	Total n=12
1	Need more information on consortia	2 (16.7)	0	5 (3.1%)	7 (58.3%)
2	Lack of infrastructure	2 (16.7)	0	6 (3.4%)	8 (66.7%)
3	Inadequate funds	2 (16.7)	0	10 (83.3%)	12 (100.0%)
4	Lack of co-operation from management	2 (16.7)	0	8 (66.7%)	10 (83.3%)
5	Inadequate staff	2 (16.7)	0	10 (83.3%)	12 (100.0%)

Therefore based on the responses from the librarians, in the last chapter a model consortia approach for the medical education institutions in Tamil Nadu has been presented.

4.18 CONCLUSION

In this chapter an elaborative survey of the libraries attached to medical education institutions in Tamil Nadu comprising of Medical, Dental and Paramedical has been analysed and interpreted. Although these libraries represent major disciplines of medicine, they are heterogeneous in nature as far as the management is concerned. In the next chapter, major findings from the analysis and suggestions are presented.

Chapter 5

Major Findings, Observations and Suggestions

CHAPTER V

MAJOR FINDINGS, OBSERVATIONS AND SUGGESTIONS

5.1 INTRODUCTION

The growth and development of medical education institutions in Tamil Nadu has been described in Chapter III highlighting their current status. In Chapter IV, the analysis and interpretation of the data collected from the sample libraries of medical, dental and paramedical institutions are presented. Based on those presentations, an attempt has been made in this chapter to highlight the major findings, observations and workable solutions. A set of suggestions and recommendations are also given.

5.2 MAJOR FINDINGS AND OBSERVATIONS

(i) Medical education in the then composite Madras State, before Independence has been noticed, with the functioning of a number of medical colleges and schools imparting Allopathy medicine, in addition to the Ayurveda and Siddha medicine (Chapter 3).

(ii) In the post-Independence period a number of medical education institutions were established in Tamil Nadu. A separate University exclusively for medical education has been established in Tamil Nadu in 1987, which is the second in India. Thus the state of Tamil Nadu has given importance for imparting education, training and research in the field of medicine and allied subjects. (Chapter 3).

(iii) Out of 275 medical education institutions in Tamil Nadu as in September 2008, about 236 (85.8%) represent self-financing category (Table 3.2).

(iv) There are four districts in Tamil Nadu without medical education institutions and in many districts there are no government medical education institutions (Table 3.3).

(v) The study comprises of 176 medical libraries (Table 4.1). There are five private universities for medical education in Tamil Nadu (Table 4.2).

(vi) Most of the medical education institutions were established after 1986 (Table 4.3).

(vii) Out of 176 libraries surveyed, 42 belong to medical, 13 dental and 121 paramedical (Table 4.4).

(viii) It is interesting to note that all the libraries have professionally qualified staff, ofcourse, the quantum of staff varies form library to library (Table 4.10).

(ix) The provision of library building and the extent of area allotted for libraries is far from satisfactory (Tables 4.13 and 4.14).

(x) Since a majority of the libraries were established after 1986, the quantum of collection in those libraries is below 10000 volumes and subscribing below 25 of each of national and international periodicals (Tables 4.20 and 4.21). It is also observed that except in a few leading medical colleges, in a majority of the libraries e-resources are not available.

(xi) A majority of the libraries classify books by following Dewey Decimal Classification, ofcourse, the edition varies (Table 4.23). Similarly more than $3/4^{th}$ of the sample libraries adopt Anglo- American Cataloguing Rules (Table 4.24).

(xii) More than $2/3^{rd}$ of the sample libraries follow Sears List of Subject Headings for assigning subject headings (Table 4.25).

(xiii) Different types of services are provided by libraries under survey, which were broadly grouped as traditional, documentation and computerised services (Tables 4.26 - 4.28).

(xiv) A majority of the libraries have acquired computer systems and necessary infrastructure peripherals (Tables 4.29 and 4.30).

(xv) Nearly $2/3^{rd}$ of the libraries were either fully automated or partially automated (Table 4.31). Among the areas of IT applications, the design and development of OPAC is predominantly seen in the libraries surveyed, followed by acquisition control (Table 4.32).

(xvi) About half of the libraries that were automated and adapted open source software, followed by in-house developed software. (Table 4.33).

(xvii) The application of barcode has been noticed only in 37 libraries. (Table 4.34).

(xviii) Majority of the libraries have developed Local Area Network connectivity (Table 4.35).

(xix) However it is interesting to note that, there is no library consortia /network being operational exclusively for medical libraries and hence those of the medical, dental and paramedical libraries have any chance to participate in a network/consortia (Table 4.36).

(xx) A majority of the libraries have Internet connectivity with 256 Kbps bandwidth speed (Table 4.37). Nearly 2/3rd of the libraries have obtained Internet connectivity through cable network, followed by Dial-up and VSAT (Table 4.38).

(xxi) BSNL is the Internet service provider for a majority of the libraries, followed by Reliance (Table 4.39).

(xxii) It is significant to note that more than 2/3rd of the sample libraries provide Internet service free of cost (Table 4.40).

(xxiii) Very few libraries have designed and developed a home page for their libraries (Table 4.41).

(xxiv) It is found from the view of librarians that computer based information services are better than manual services (Table 4.42).

(xxv) It is proved through Chi-square test that there is no significant relationship between the variables not affecting collection development and the ICT applications in the libraries under survey (Tables 4.44 - 4.46).

(xxvi) It is found from Freedman Test that there is no significant difference between mean rank of the variables representing staff attitude towards ICT applications in libraries (Table 4.47).

(xxvii) There exists a higher degree of positive attitude towards ICT applications from the point of view of librarians under survey which has been proved through cluster analysis (Tables 4.48 - 4.51 and Figure 4.23).

(xxviii) There is no significant difference between categories of managements of the libraries with respect to the overall opinion of the staff attitude towards ICT applications in libraries, which was proved through ANOVA test (Table 4.52).

(xxix) Similarly, there is no significant difference between different types of libraries with respect to the subject category on the over all opinion about the staff attitude towards ICT applications (Table 4.53).

(xxx) A total of 9 variables were identified as reasons for poor application of ICT in libraries under study. It is proved through Freedman Test that, there is significant difference in mean rank value towards reasons for poor ICT applications since P value is less than 0.1 (Table 4.54).

(xxxi) On clustering the variables of reasons for poor ICT applications, 3 clusters have been formed which are grouped as primary, secondary and tertiary reasons (Tables 4.56-4.58 and Figure 4.24). The major reasons for poor ICT applications

are, lack of adequate trained staff in ICT applications, lack of interest of the staff and lack of coordination.

(xxxii) It has been proved from the ANOVA test that there is no significant difference between the categories of libraries with respect to the overall opinion about the staff attitude towards the reasons for the poor ICT applications in libraries (Table 4.59).

(xxxiii) Similarly there is no significant difference between different subject categories of libraries with respect to the overall opinion about the staff attitude towards the reasons for poor the ICT applications in libraries (Table 4.60).

(xxxiv) It is interesting to note that a majority of the librarians are aware of the library consortia and also expressed their willingness to join library consortia (Tables 4.61 and 4.62).

(xxxv) One of the main reasons for joining consortia is "*saving the cost of journals*" as expressed by the majority librarians under survey which is also proved by WAM test (Tables 4.63 and 4.64).

(xxxvi) Although a small number of librarians did not desire to join in consortia, they have substantiated with at least five reasons that made them not to join library consortia (Table 4.65).

5.3 FINDINGS IN RELATION TO HYPOTHESES

1. The hypothesis one "The growth and development of medical libraries shows a linear trend" **has been proved in Chapter III.**

2. The hypotheses two to seven which reads as,

   - "Majority of the libraries attached to medical education institutions are lacking in necessary infrastructure facilities and resources".

   - "Majority of the libraries attached to medical education institutions has introduced information and communication technology based information services".

   - "The application of information and communication technology in the libraries is not satisfactory".

   - "Medical librarians have a positive attitude towards information and communication technology applications".

   - "Factors like lack of finance, lack of manpower, lack of training etc., hinder the application of information technology in medical libraries under survey".

   - "There is a strong association between the opinions of librarians and the consortia approach" **were found valid, as proved in Chapter IV**.

5.4 SUGGESTIONS / RECOMMENDATIONS

Based on the analysis in Chapter IV, the major findings and observations of the study, listed in this chapter, the following suggestions have been made:

5.4.1 Building Provision

In view of the existing building provision for libraries which is far from satisfactory, it is suggested that colleges should construct separate building exclusively for library. In the case of self–financing institutions, it is also suggested that the library professionals shall bring pressure on the management to provide separate building for libraries by explaining the urgent need and resultant benefits in the light of ICT environment. Further as far as possible, the libraries need to be air-conditioned, properly illuminated and ventilated.

5.4.2 Library Committee

The study reveals that, in a majority of the libraries, the constitution of the Library Committee is not seen. Realising the significance of the functioning of Library Committee, it is urged that all libraries shall constitute a library committee comprising of Head of the Departments, Principal and student representatives and the Librarian will act as a convener. In order to have a broad based committee more reasonable to all the users, it is recommended that there should be representatives of medical, dental and paramedical professionals also. Such a committee shall meet regularly to take decisions on matters pertaining to libraries.

5.4.3 Collection Development

It is found in the study that in most of the libraries the quantum of the collection has not developed in a large scale and moreover the acquisition of e-resources is not seen. This situation has been observed mostly in paramedical institutions and self-financing medical institutions. Moreover the libraries in general do not have collection development policy. Therefore, considering the urgency for balanced collection development, it is suggested that a sound collection development policy shall be drafted and implemented with necessary guidelines. In view of the ICT environment and emergence of e-resources in the medical field, it is suggested that libraries shall pay more attention to procuring e-resources and subscribing to e-journals and Data bases etc.

5.4.4 Manpower Development

The study reveals that, although all the libraries have appointed qualified librarians, they are under staffed to carry out various activities. Further it is sad to note that the manpower standards developed by Medical Council of India (MCI) are not revised since 1980's. Therefore it is appealed to the Medical Council of India, which is the highest body in medical education to frame and re-draft the guidelines for manpower development in view of the changing trends in Library and Information Science. Further it is suggested that the existing staff shall be trained in the application of Information and Communication Technology (ICT) in the libraries through Continuing Professional Education (CPE) programmes. The existing training

programmes for medical librarians need to be further improved with regard to the computerisation programmes and new courses to be introduced in order to improve human resource development.

5.4.5 Revision of Medical Library Standards

The medical library standards laid down earlier be looked in a fresh and revised standards shall be formulated and brought to the notice of the Medical Council of India (MCI) for consideration and implementation.

5.4.6 Automation of Medical Libraries

Although a sizable number of libraries have acquired computers, it is found in the study that those libraries are not fully automated. Keeping in view the existing situation in the libraries, it is recommended that the managements shall take necessary steps to automate the library operations in a phased manner so as to keep pace with the current developments in the digital era.

5.4.7 Use of ICT in Medical Libraries

The medical libraries should adapt the recent developments in information and communication technology in order to improve the information support to their clientele, especially with reference to the use of computer platform, CD ROMs, CD-NET stations and databases. Modern reprographic methods and networks such as UGC-Infonet, NICNET, INDONET, etc., should be used and adequate budget should be provided. The

libraries should use the modern advances in artificial intelligence expert systems etc., in order to improve the existing information services in medical libraries in the state of Tamil Nadu.

5.4.8 Conduct of User Studies and User Education Programmes

In order to promote the use of libraries, it is suggested to develop and implement user education programmes periodically in the libraries. Taking into consideration the availability of Internet, librarians shall also develop web based user education programmes. It is also suggested to conduct user studies periodically to gauge the effective use and non-use of library resources and services which would help in the introduction of new services in the libraries.

5.4.9 Creation of Library Consortia

The medical libraries should participate actively in networking/consortia in order to rationalise the expenditure on books, journals etc., and to improve the document support services to the clientele. Realising the significance and benefits on formulating library consortia and in the light of existing library consortia in India such as UGC-Info net, AICTE-INDEST and in view of the librarians opinions towards consortia, it is strongly recommended that a separate library consortia for medical libraries in Tamil Nadu be developed.

Keeping this in mind, a consortia model for Tamil Nadu medical libraries namely MEDLIBCON is presented in the next chapter.

Chapter 6

Medical Library Consortia of Tamil Nadu : A Proposal

CHAPTER VI

MEDICAL LIBRARY CONSORTIA OF TAMIL NADU: A PROPOSAL

6.1 INTRODUCTION

No library, however big it may be, will be able to satisfy all the needs of its clientele due to various constraints. It is because of this phenomenon that the concept of resource sharing has been developed. Initially the term used for resource sharing activities was "library cooperation". Though cooperation theoretically could embrace almost all library activities, practically it was confined to interlibrary loan of library documents. But due to physical distance and other reasons even this limited system of cooperation was not being widely practiced. However, with the advent of ICT and its application in library activities, new opportunities opened up for greater cooperation among libraries. Internet at the global level and at the national and local levels, several library networks have come in to vogue and databases created for information sharing. In recent years availability of information resources in digital or electronic medium has further facilitated exchange of information resources among libraries, thus creating a favourable condition for increased resource sharing. Emergence of library consortia is a very promising development in this direction.

6.2 FACTORS NECESSITATING CONSORTIA AMONG MEDICAL LIBRARIES IN TAMIL NADU

The state of Tamil Nadu has been in the forefront of providing quality education and the field of medicine is no exception. Although a large number of medical education institutions are functioning with qualified librarians, they are not fulfilling the necessary requirements with regard to information resources and other infrastructure facilities. In order to overcome the problems of medical libraries in Tamil Nadu and based on the survey conducted, wherein the librarians expressed a willingness to form medical library consortia, this study has proposed medical library consortia. In addition to the above, the following factors influenced medical libraries in Tamil Nadu towards consortia:

- Increase in prices of books and journals;
- Limited library budget;
- Cost of providing library services;
- Exponential growth of information in medicine;
- Inadequacy of information materials required for a single medical library;
- Increase in variety and degree of user needs; and
- Developments in information and communication technology.

6.3 MEDLIBCON OF TAMIL NADU

Library and information consortia by interlinking all the medical education libraries of Tamil Nadu State, has been named as Medical Library Consortia (MEDLIBCON). Such a regional consortia programme will extend access to the health literature not only to the medical colleges but also to Dental and Nursing Colleges, other hospitals and Primary Health Care Centres etc. as well.

6.3.1 Objectives of MEDLIBCON

The objectives of proposed MEDLIBCON are as follows:

- To promote sharing of resources among the medical education libraries in Tamil Nadu, through consortia for maximum use of resources and better facilities for users;
- To co-ordinate efforts for suitable collection development and reduce unnecessary duplication wherever it is possible;
- To enable each medical college library to provide its users access to the vast amount of information resources available with other medical colleges libraries under study;
- To develop a wide range of information services using latest information and communication technologies;
- To utilise the services offered at national level by NML, NIC etc. and to have access to variety of external resources such as MEDLARS/MEDLINE, BIOSIS, and Pub-MED etc;

- To evolve standards and uniform guidelines in techniques, methods procedures, hardware software and services and promote their adaption in the libraries; and
- To establish a referral centre for maintaining a central on-line union catalogue of books, serials and non-book materials of all the participating libraries.

6.4 ORGANISATIONAL STRUCTURE OF MEDLIBCON

MEDLIBCON has been proposed as distributed consortia, with the Tamil Nadu Dr.M.G.R. Medical University Library to act as the Nodal Centre Library. Each of the other medical college libraries will collect process and hold information on local computers, which will be linked with the Nodal Centre Library and also with one another.

In addition to the advantages of its location, the Tamil Nadu Dr. M.G.R. Medical College Library has adequate funds, rich collection of current documents and adequate computer facilities. The Tamil Nadu Dr. M.G.R.Medical University has academic control over all the medical colleges and educational institutions and it also facilitates to improve the system for higher education and research. However, the Nodal Centre would function independently and sustain its expenses contributed by the participating institutions/libraries.

The Nodal Central Library will be linked to the National Medical Library (NML), New Delhi. The Nodal Centre Library will act as input and

output centre of health information of the region. All the participating members will hold resources to share with one another.

6.4.1 Adhoc Committee

In the framework of proposed consortia, it is desirable to have an adhoc committee to explore the feasibility of establishing the consortia and its mode of operation.

The adhoc committee may consist the following:

• Principal/Head of the Institution	Chairman	-	1
• Senior Faculty of the Nodal Centre	Member	-	1
• Consortia Administrator	Member	-	1
• Library and Information Science Expert	Member	-	1
• System Analyst	Member	-	1
• Librarians (Regional Centres)	Member	-	5
• Librarian (Nodal Centre)	Convener	-	1

The adhoc committee will be responsible to establish the consortia in one of the potential libraries identified. Further the adhoc committee will be responsible to establish the consortia in the nodal centre identified, after the evaluation of the magnitude of the library and other aspects of utility of ICT and other facilities. The nodal centre can identify the participating institutions who wish to join. Further, the implementation and execution will be taken care of by the other committees. The organisational structure and consortium models are shown as Figures 6.1 - 6.3.

The Figure 6.1 shows the organisational structure of the proposed consortia for medical libraries in Tamil Nadu. To ensure proper coordination and participation of all libraries, there is a need for the coordinating agency and this should be empowered certain amount of power to control and facilitate the smooth functioning of the proposed consortia.

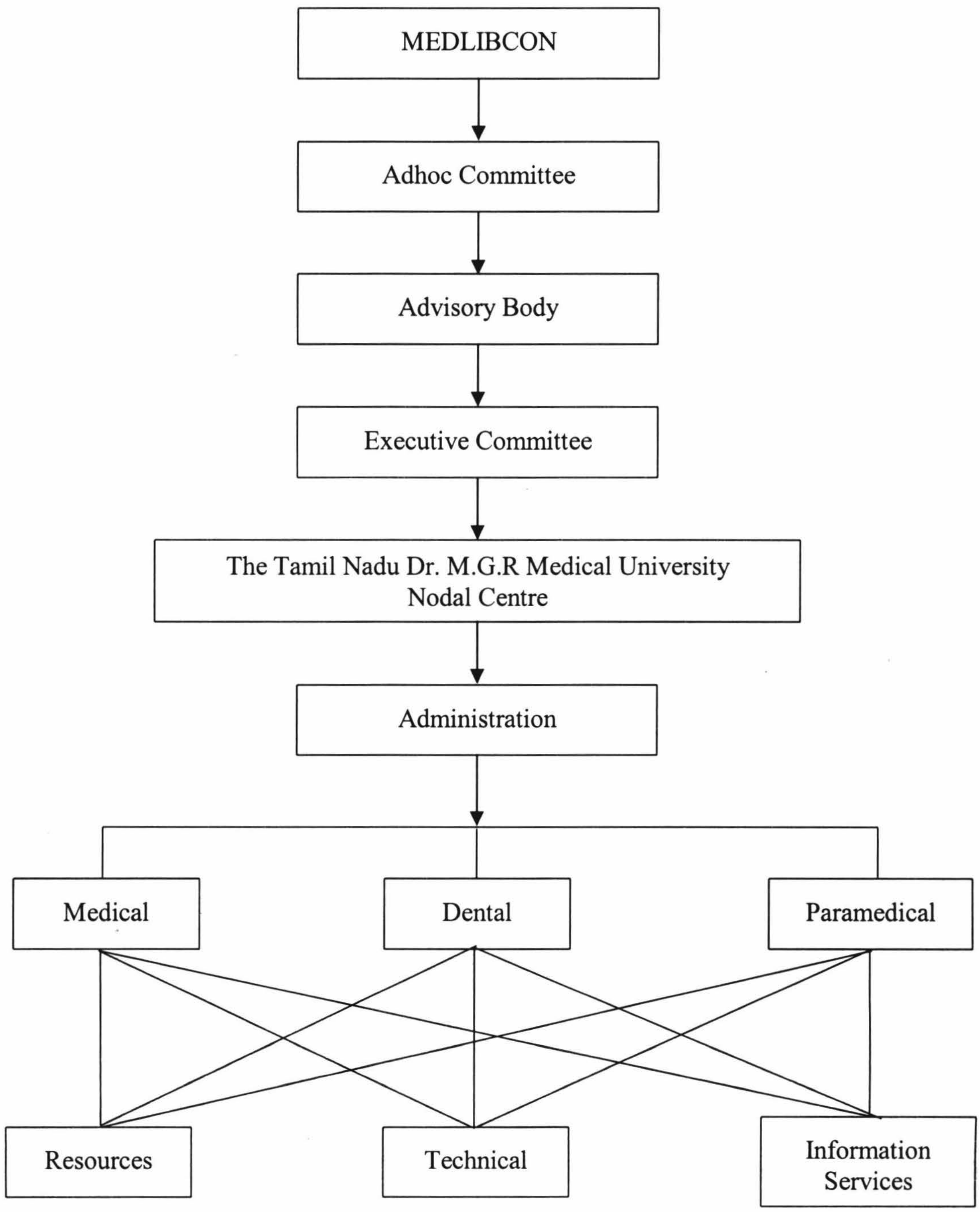


Figure 6.1 Organisational Structure of MEDLIBCON

6.4.2 Advisory Body

The advisory body may consist of 16 members. The Vice Chancellor of the Tamil Nadu Dr. M.G.R. Medical University shall be the chairman of the advisory body. To give proper participation to the heads of the institutions of participating libraries, the librarians from the participating institution shall be coopted as the members.

▪ Vice-Chancellor	Chairman	1
▪ Experts in Consortia	Member	2
▪ Experts in LIS field	Member	2
▪ Representatives of the Heads of the institution from participating libraries	Member	5
▪ Representatives of the Librarians from Participating libraries	Member	5
▪ Librarian of the Nodal centre	Convener	1

6.4.3 Executive Committee

After the establishment of the nodal centre, the executive committee will chalk out the implementation of the consortia in a phased manner. The executive committee comprises of the following members:

▪	Head of the institution (Nodal centre)	Chairman	1
▪	Representatives of librarians from participating libraries	Member	5
▪	Representatives of users	Member	3
▪	System Analyst at the Nodal Centre	Member	1
▪	Senior faculty members in the Nodal Centre	Member	2
▪	Librarian of the Nodal Centre	Convener	1

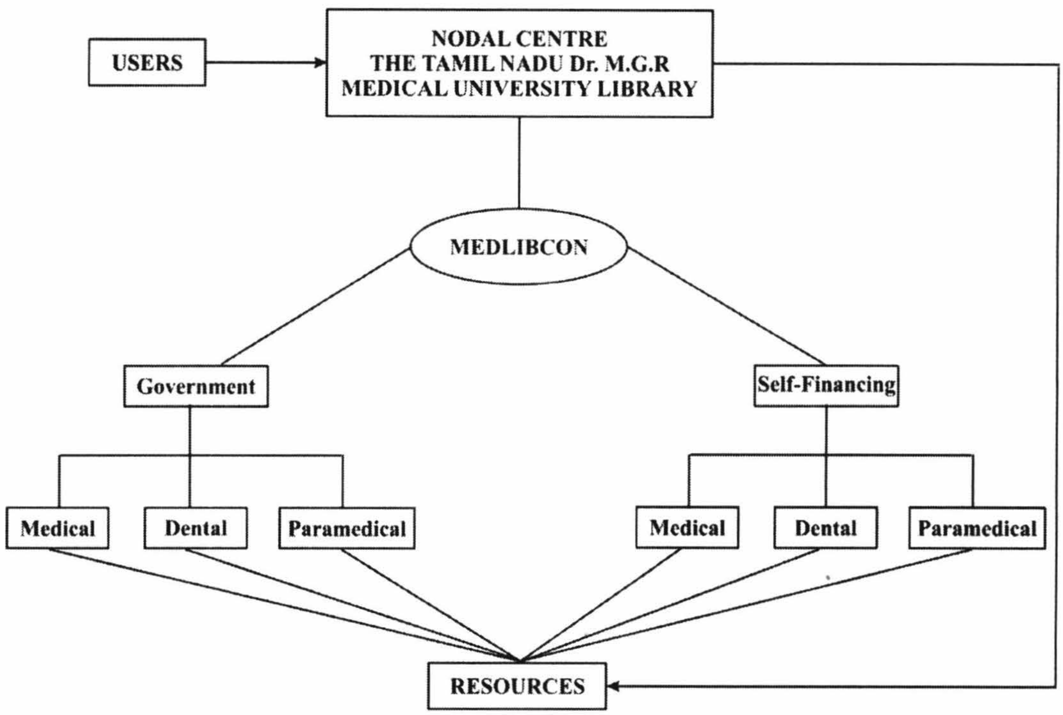


Figure 6.2 Consortia Model of MEDLIBCON

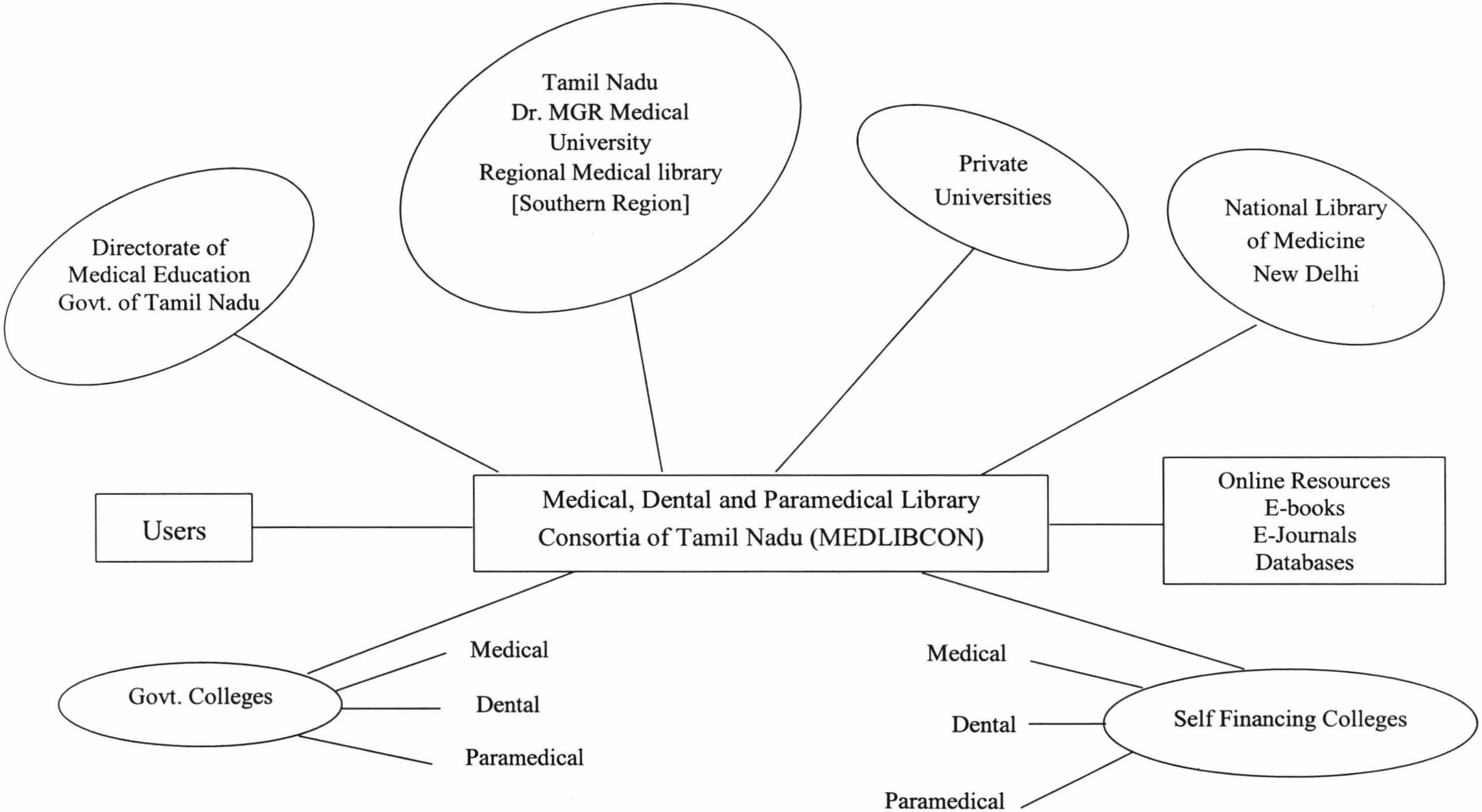


Figure 6.3 Medical, Dental and Paramedical Library Consortia of Tamil Nadu (MEDLIBCON)

6.5 WORKING OF MEDLIBCON

For the successful functioning of MEDLIBCON, all the participating libraries are required to develop the necessary infrastructure. First of all, they must computerise their library operations and create databases of their holdings. These would include adequate provision of computer systems with appropriate hardware and software, trained manpower and financial support. Secondly to avoid unnecessary duplication of the resources and the services, a central union catalogue of books, serials and non-book materials of all the participating libraries will be compiled by which all the participating libraries will have comprehensive collection in all subjects at their disposal and the user will also have an access to the collection of not only his/her library, but also other library collections in the consortia.

Standardisation of the techniques, procedures and methods is an essential pre-requisite for the effective functioning of consortia. Participating libraries will have to follow certain procedures and practices without which, the resources held by them cannot be effectively and meaningfully shared. It will be quite advantageous if MEDLIBCON advocates the use of CCF so that records will be generated much faster and they can be inter-changed with any ISO-2709 based format in the world. AACR II could be used for cataloguing purposes and MeSH for producing standard subject descriptors.

For monitoring the system, there should be a Monitoring Committee, which would evolve policy guidelines after discussions with the concerned medical libraries. To ensure the success of such an innovative venture, the

ICMR (Indian Council of Medical Research) which is taking care of the growth and development of medical research in the country, should come forward to provide the necessary financial support, guidance and the encouragement for this consortia. The state of Tamil Nadu should also provide the required finances for this establishment. The authorities of concerned medical colleges should also make a provision for a greater allocation towards the library budget to pave way for its success.

6.6 IMPLEMENTATION OF MEDLIBCON

The medical libraries of Tamil Nadu can accomplish, through the implementation of MEDLIBCON, a more effective user service. The development and management of the proposed consortia involve higher commitment and dedicated efforts in the present environment where majority of medical libraries do not have adequate computer facilities, budgeting and qualified and computer trained professionals to introduce consortia. MEDLIBCON will be planned in two phases. In the first phase, all the medical education institution libraries of Tamil Nadu are required to develop the necessary infrastructure and computerise their library operations and create databases of collection. In the second phase, these libraries will be interlinked and will form a part of the proposed consortium

6.7 PROPOSED MODEL OF MEDLIBCON

The output screens of the MEDLIBCON are shown in the following Figures 6.4 to 6.21.

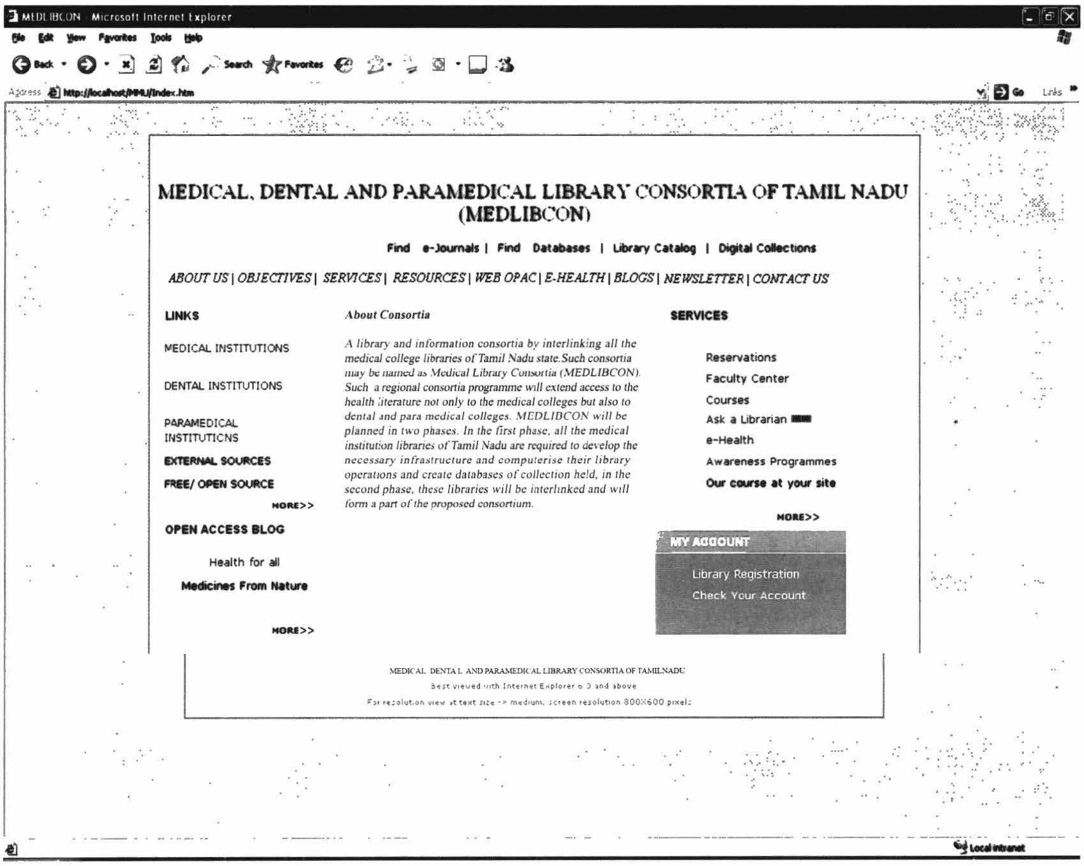


Figure 6.4 Opening Screen of MEDLIBCON

The opening screen of the MEDLIBCON is shown in Figure 6.4 that provides information about the consortia and links to services and other facilities in the proposed consortia.

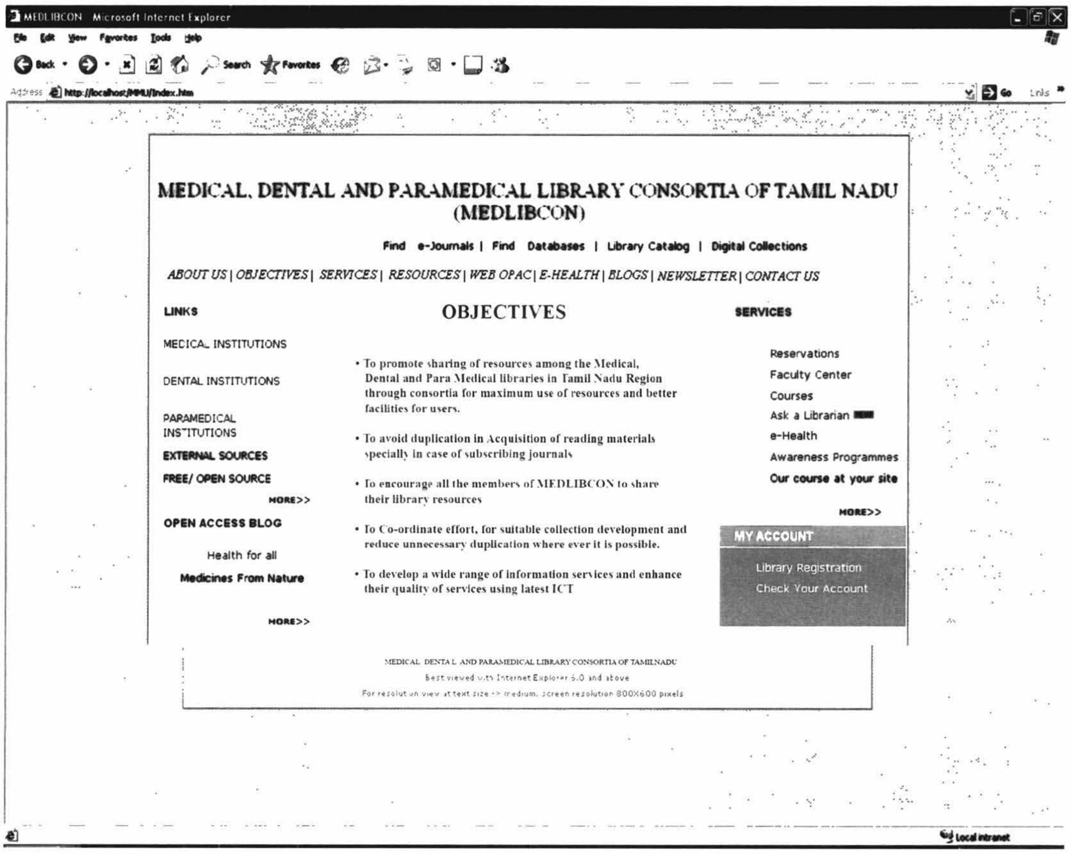


Figure 6.5 Display Screens of Objectives of MEDLIBCON

By clicking the "objectives" link in the opening screen as shown in the Figure 6.4, the screen containing the objectives will be displayed as shown in Figure 6.5.

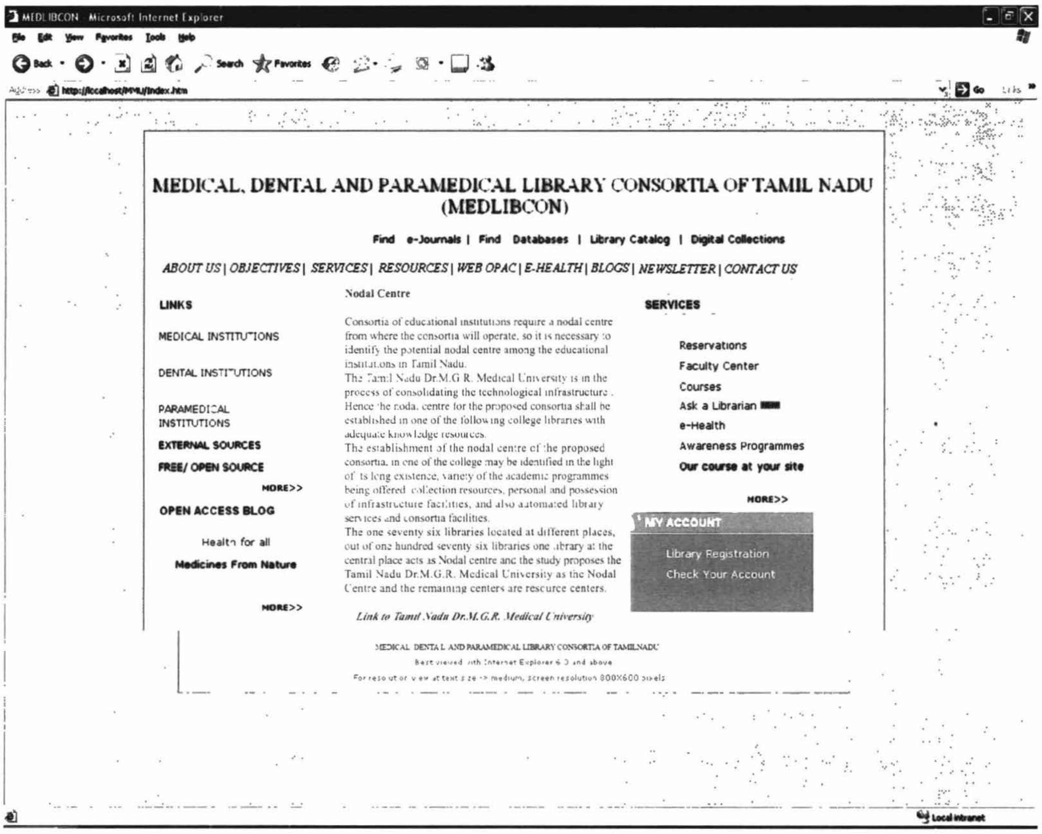


Figure 6.6 Display Screen of Information about Nodal Centre

By clicking Nodal Centre Link, the Figure 6.6 will appear which will display information about the Nodal Centre of MEDLIBCON.

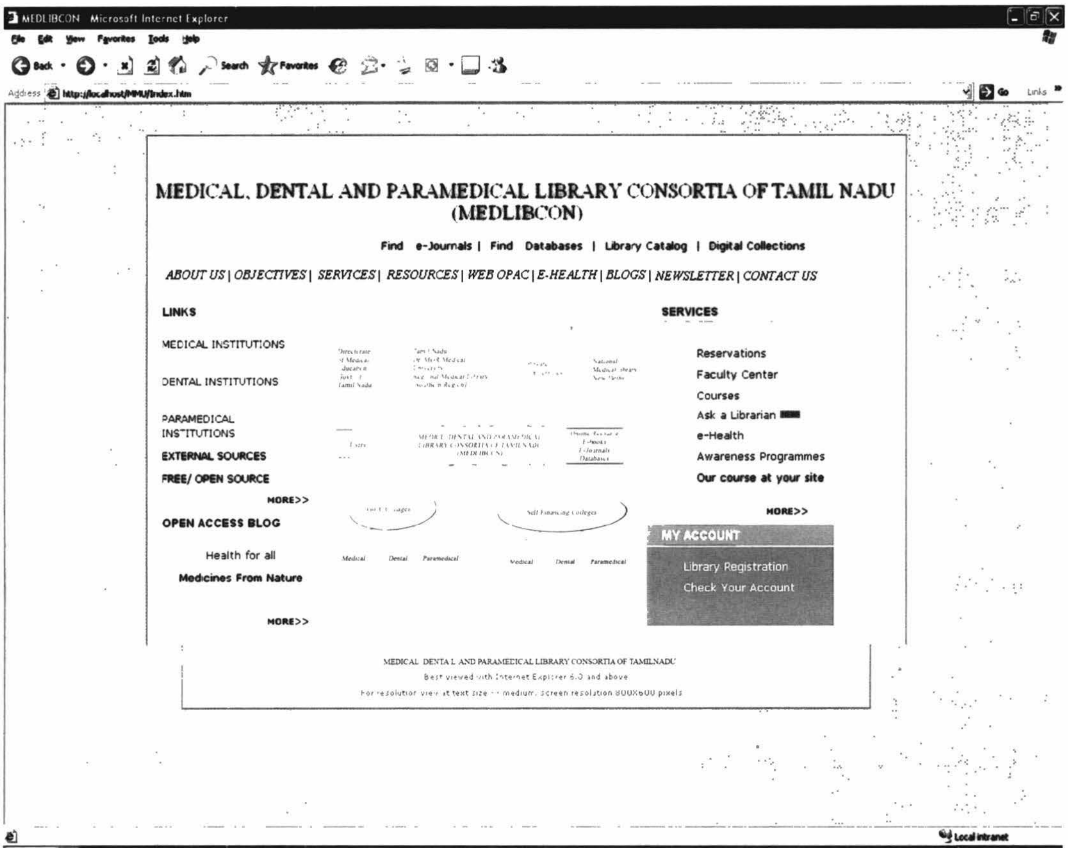


Figure 6.7 Display Screen of Medical, Dental and Paramedical Library Consortia of Tamil Nadu (MEDLIBCON): A Prototype Model

The display screen in the Figure 6.7 shows the model of the MEDLIBCON.

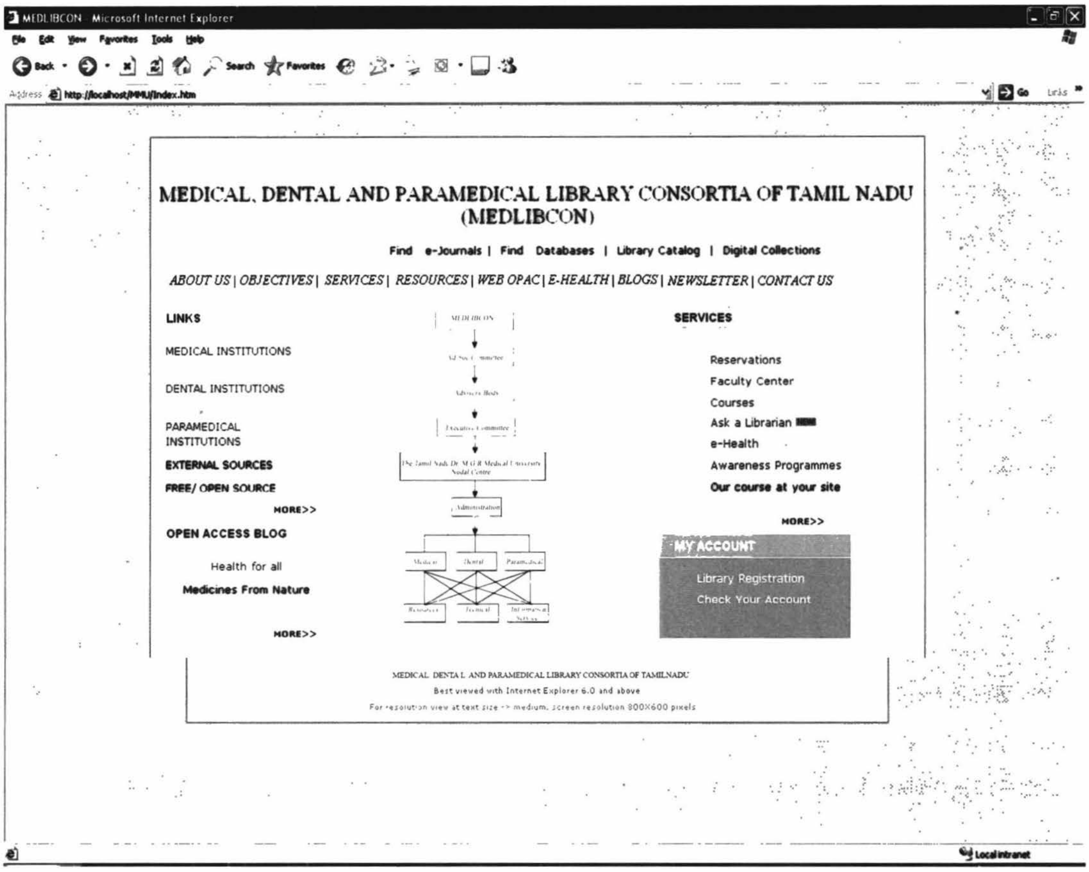


Figure 6.8 Organisational Structure of MEDLIBCON

The display screen in the Figure 6.8 presents the organisational structure of MEDLIBCON.

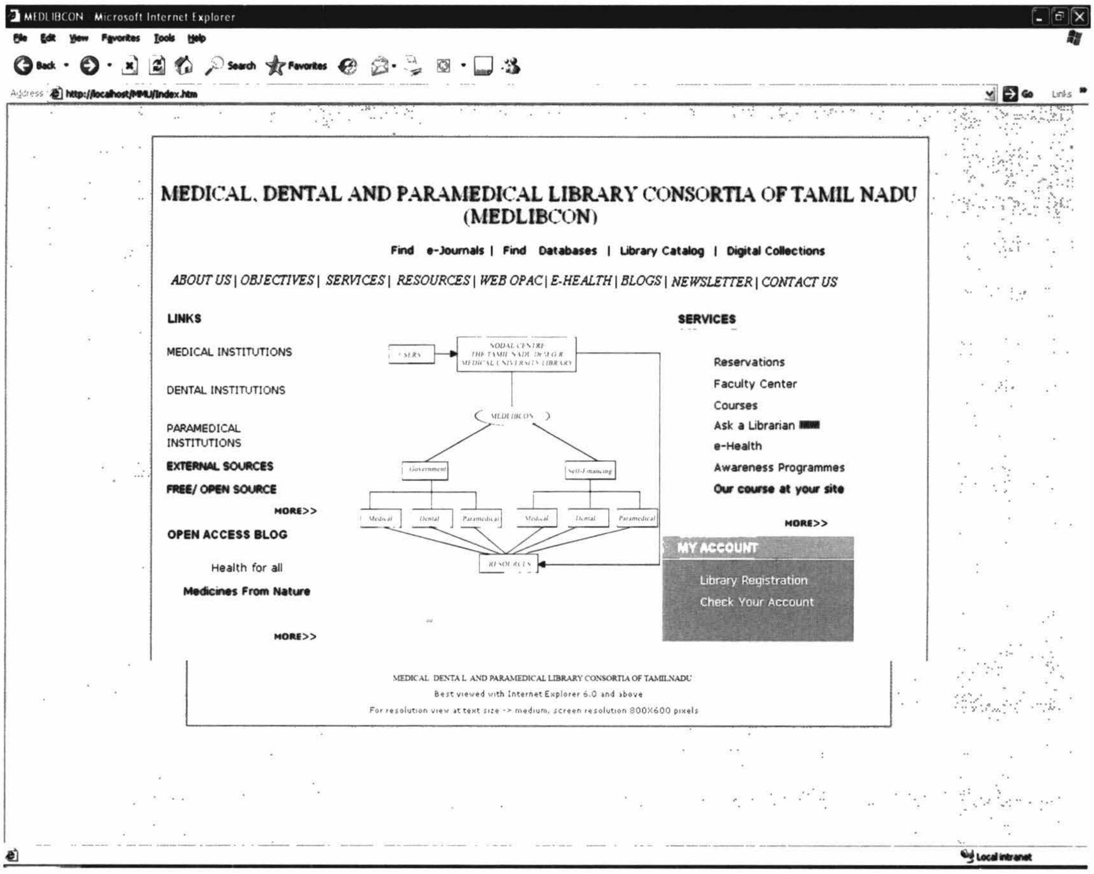


Figure 6.9 Consortia Model of MEDLIBCON

The display screen in the Figure 6.9 shows the consortia model of MEDLIBCON providing link from Nodal Centre to other participating libraries.

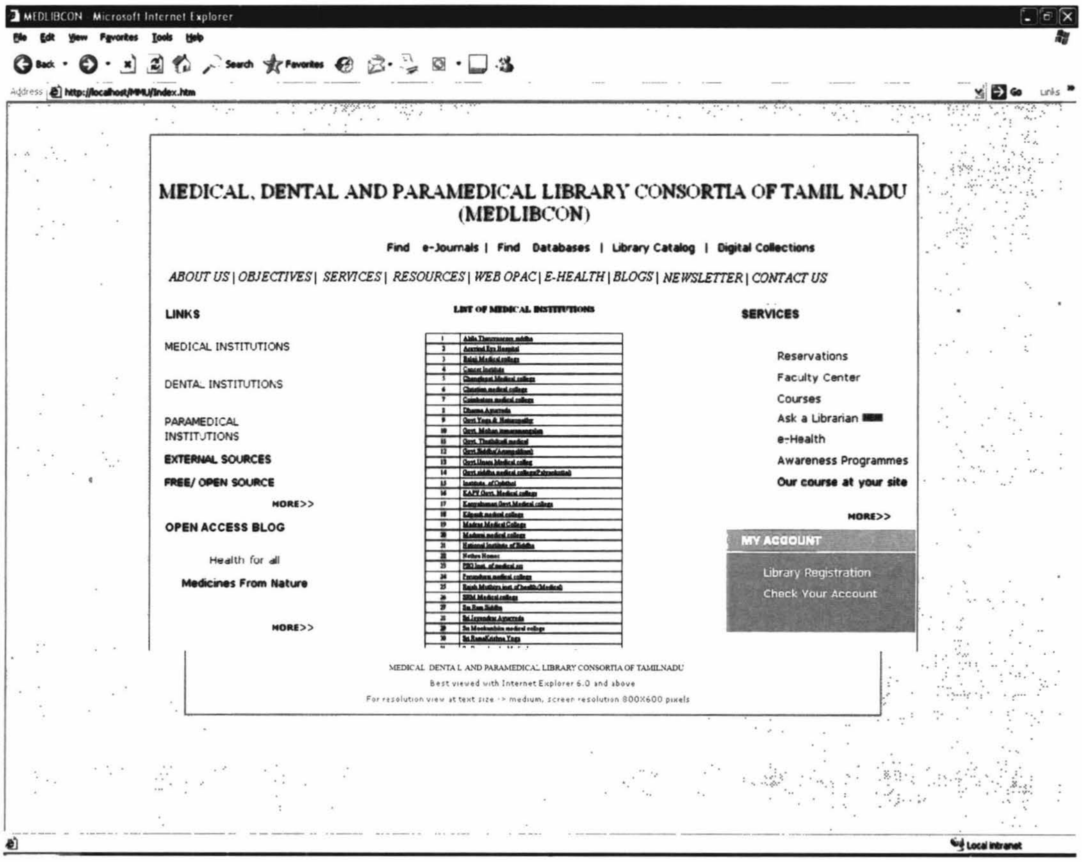


Figure 6.10 Display Screen of List of Medical Institutions of the MEDLIBCON

By clicking the "Medical Institutions" link, the list of medical institutions in Tamil Nadu are displayed as shown in the Figure 6.10.

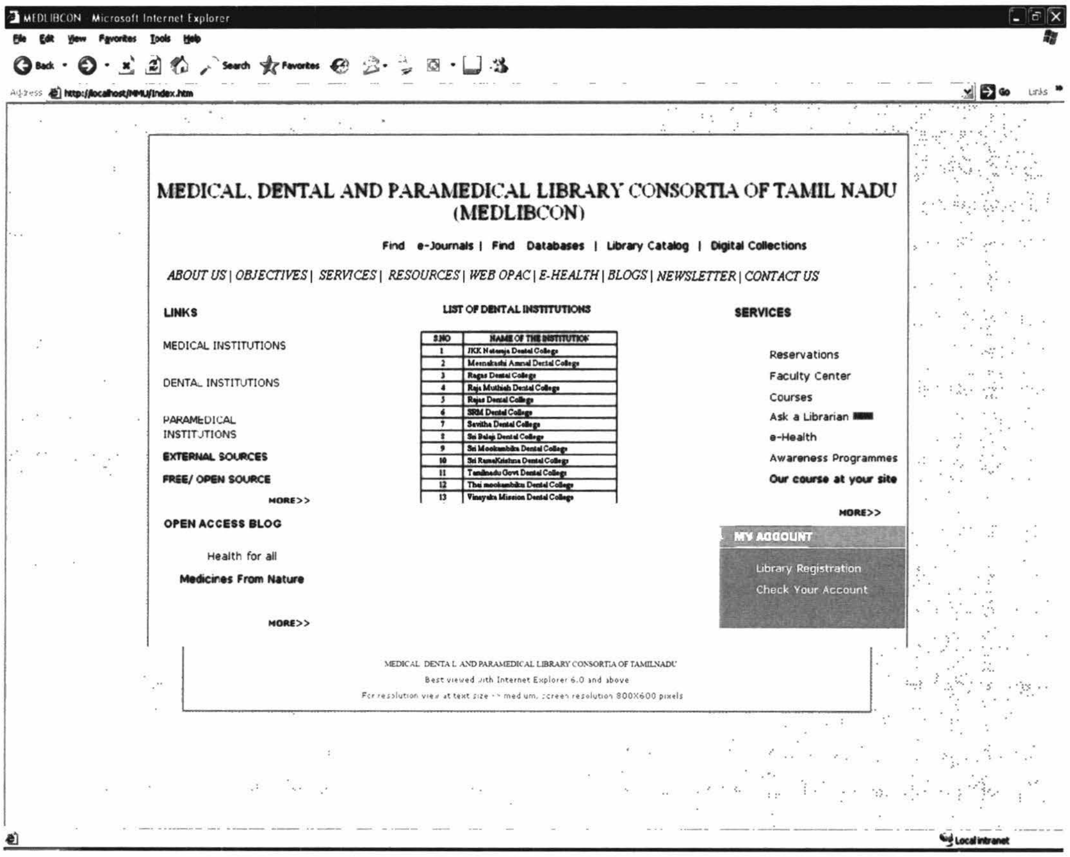


Figure 6.11 Display Screen of List of Dental Institutions of the MEDLIBCON

By clicking “Dental Institutions” link, the list of Dental Institutions in Tamil Nadu are displayed as shown in the Figure 6.11.

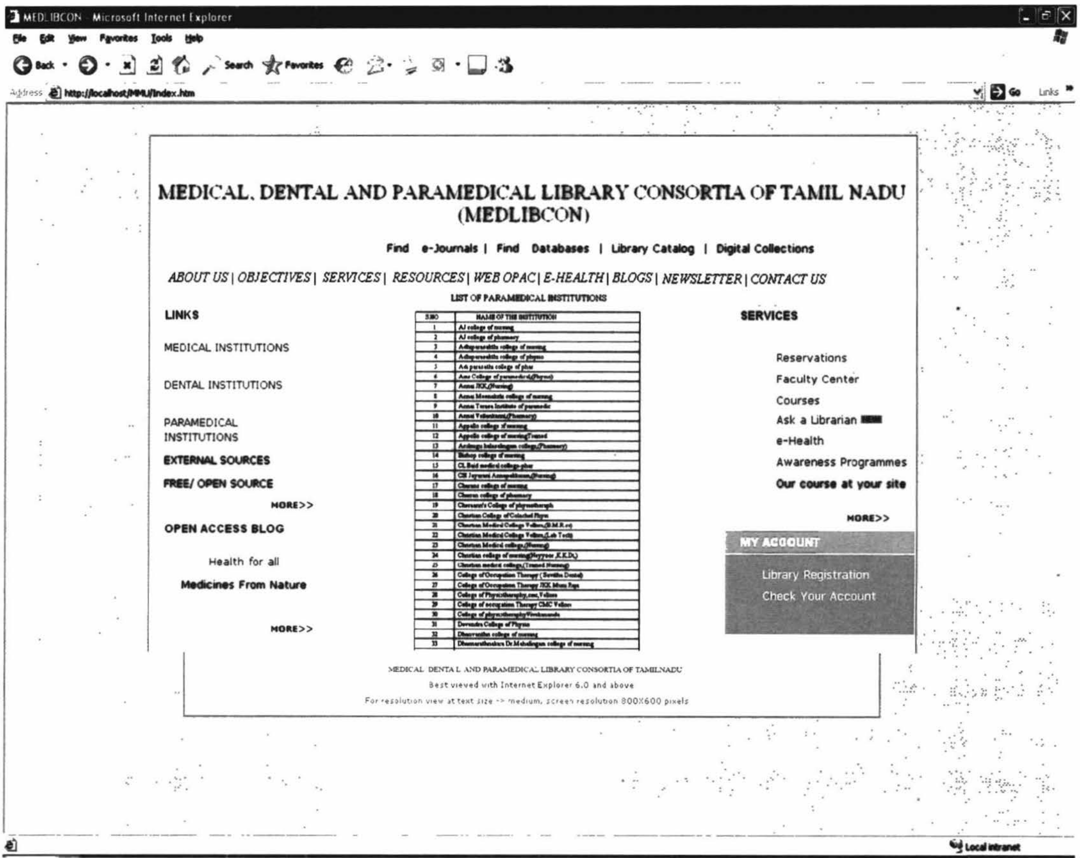


Figure 6.12 Display Screen of List of Paramedical Institutions of the MEDLIBCON

By clicking "Paramedical Institutions" link, the list of Paramedical Institutions in Tamil Nadu are displayed as shown in the Figure 6.11.

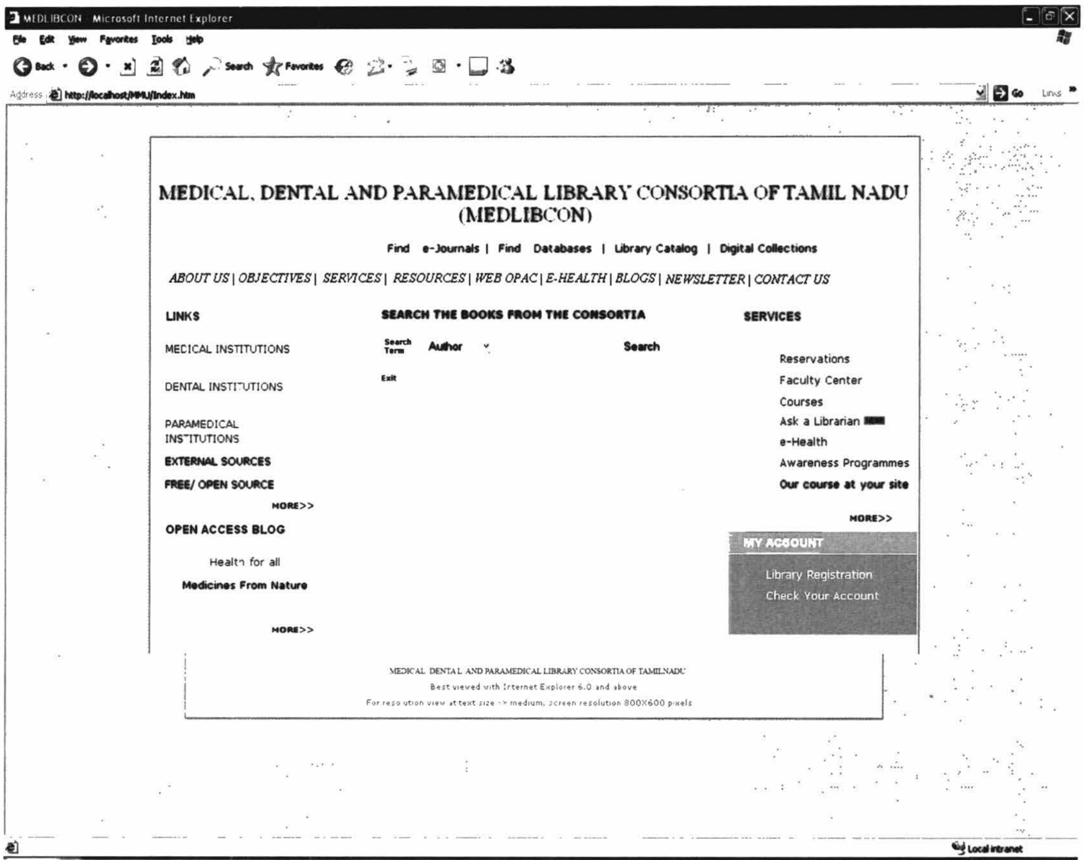


Figure 6.13 Display Screen of Book Search

The output screen in Figure 6.13 presents the model of searching for books from the consortia.

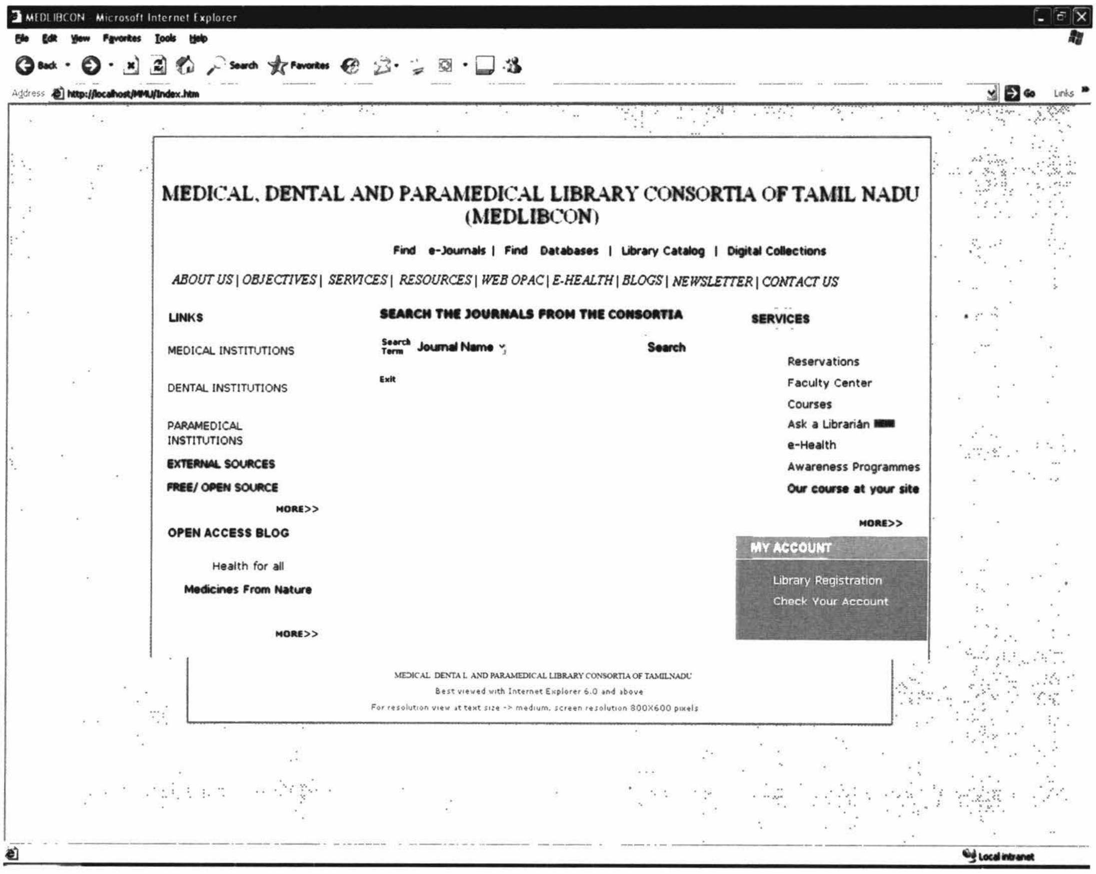


Figure 6.14 Display Screen of Search for Journal

The output screen in Figure 6.14 reveals the model of searching for journals from the consortia.

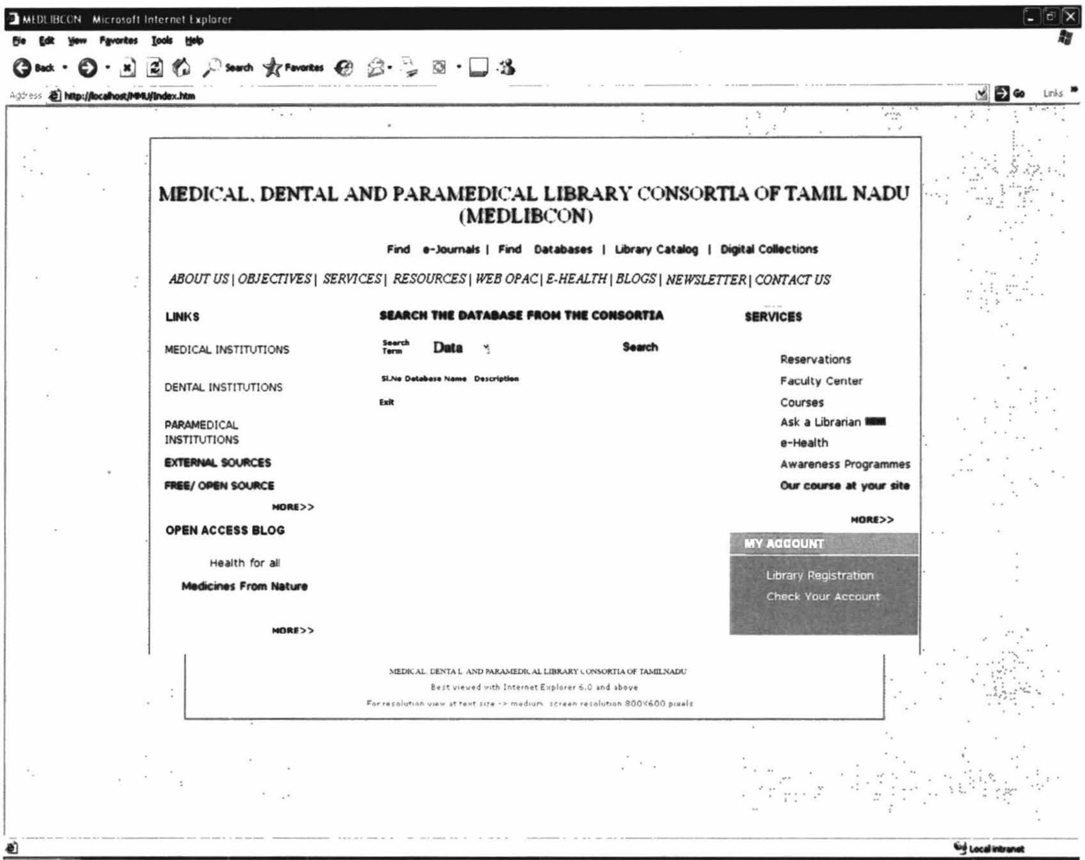


Figure 6.15 Display Screen of Searching the Databases

The output screen in Figure 6.15 shows the model of searching medical database from the consortia.

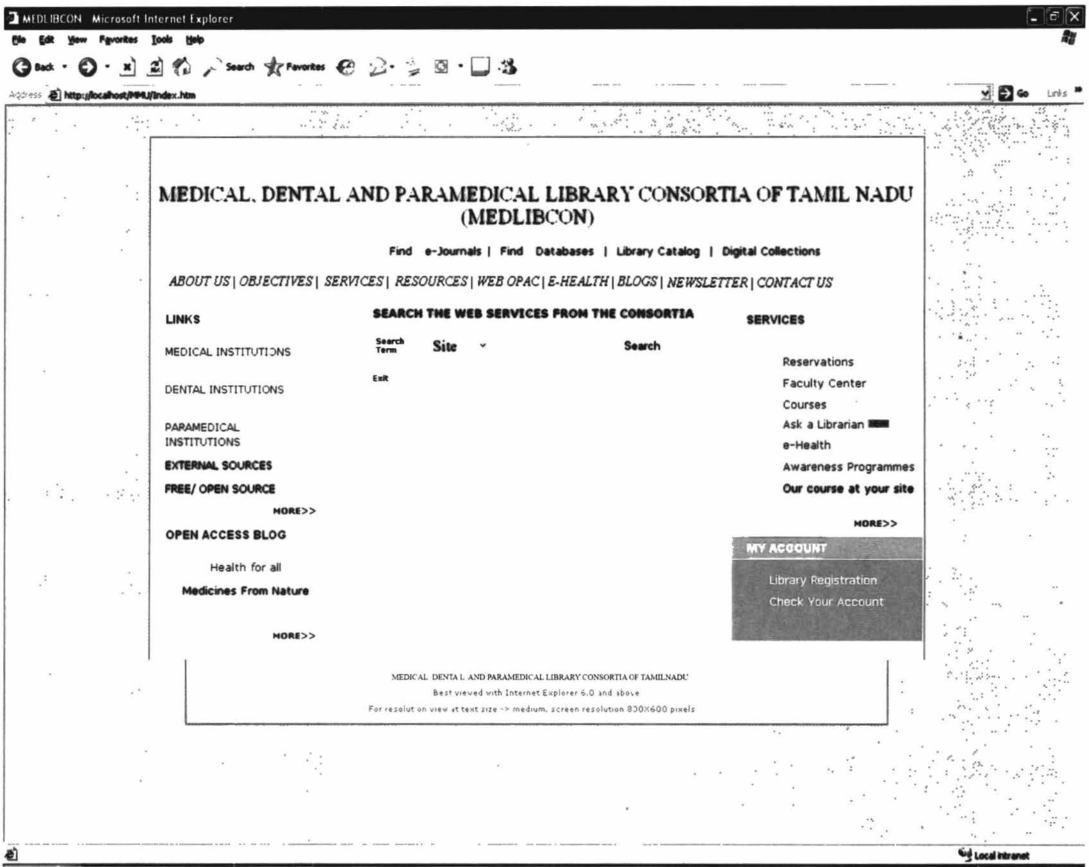


Figure 6.16 Display Screen showing the Searching the Web Service

The output screen in Figure 6.16 shows the model of searching the medical web services from the consortia.

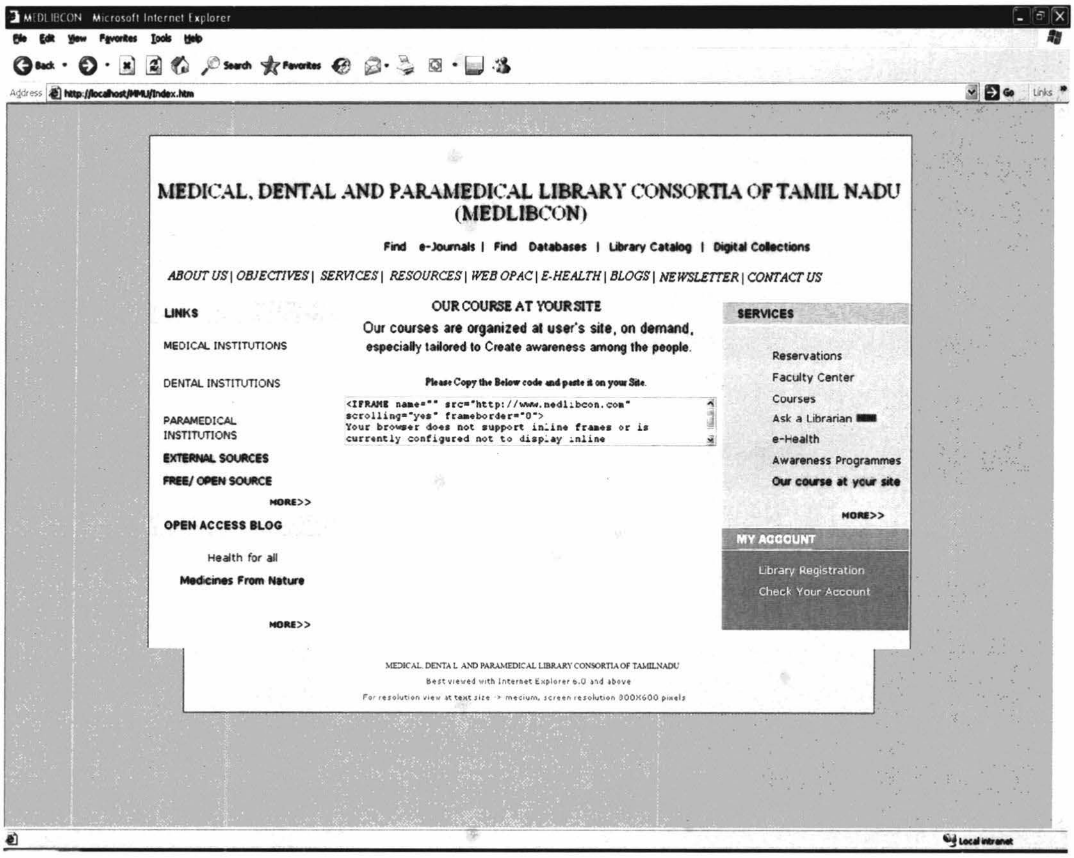


Figure 6.17 Display Screen of List of Courses

The output screen in Figure 6.17 reveals the list of medical courses offered by the institutions in Tamil Nadu

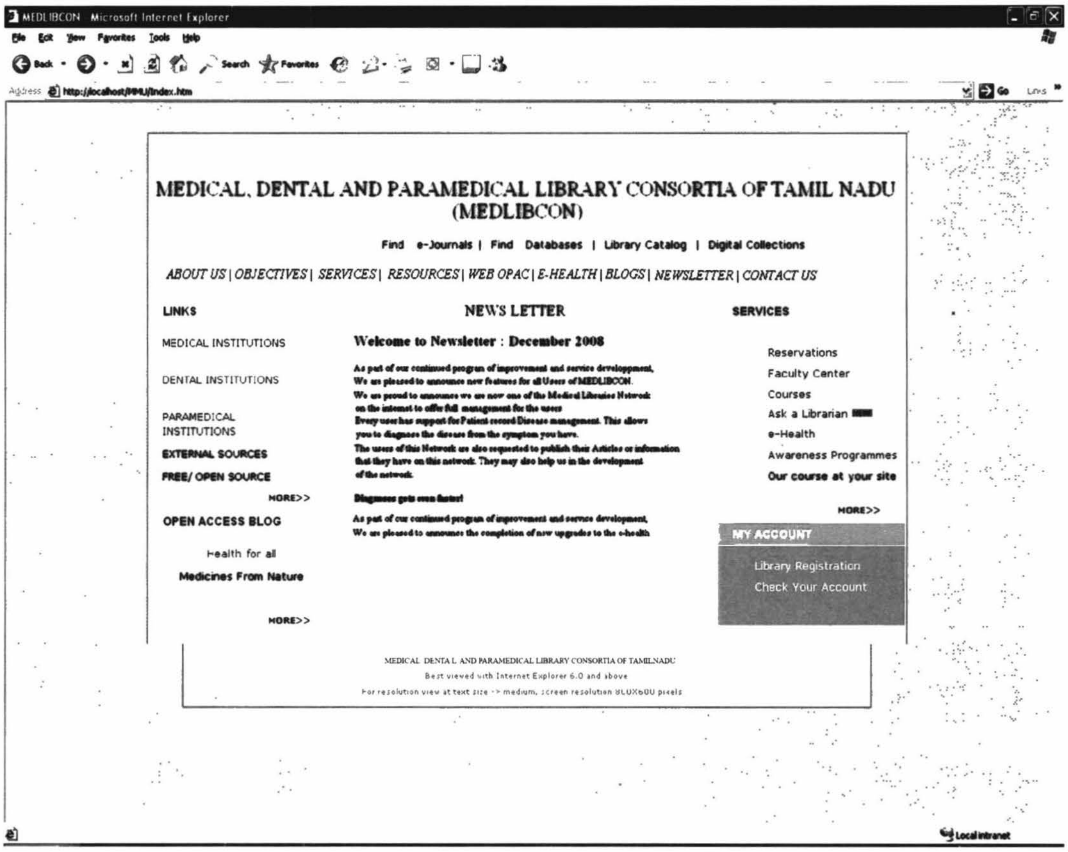


Figure 6.18 Display Screen of Newsletter

The output screen in Figure 6.18 reveals the access to “Newsletter” of the MEDLIBCON.

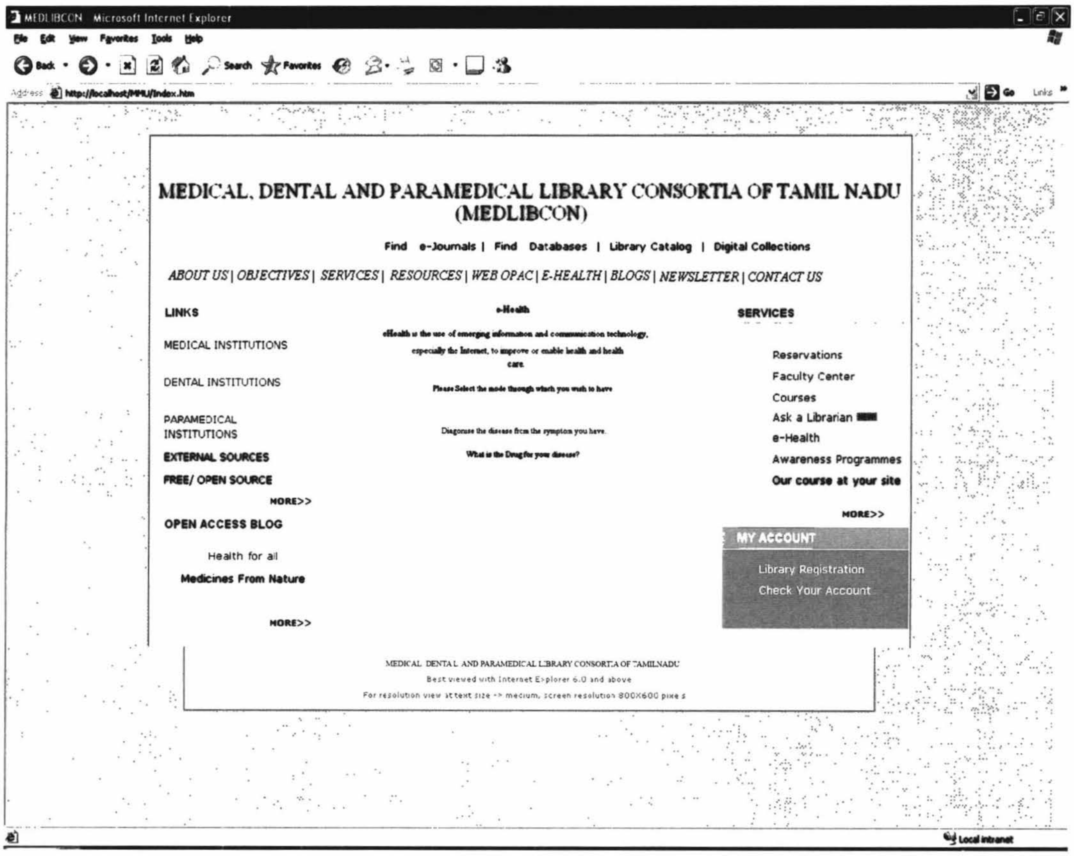


Figure 6.19 Screen Showing the Services of e-Health

The output screen in Figure 6.19 shows the e-health services of the MEDLIBCON.

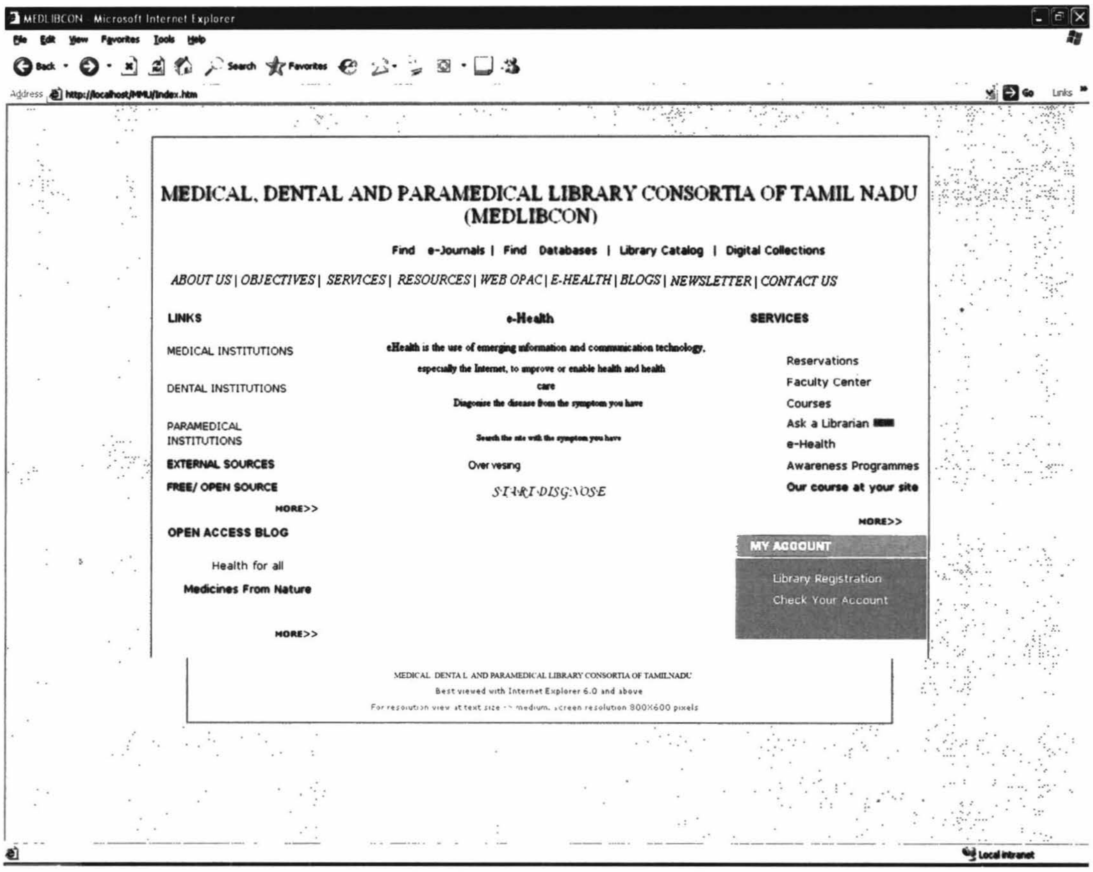


Figure 6.20 Screen showing the Diagnosis Service

The output screen in Figure 6.20 shows the diagnosis service for a specified disease.

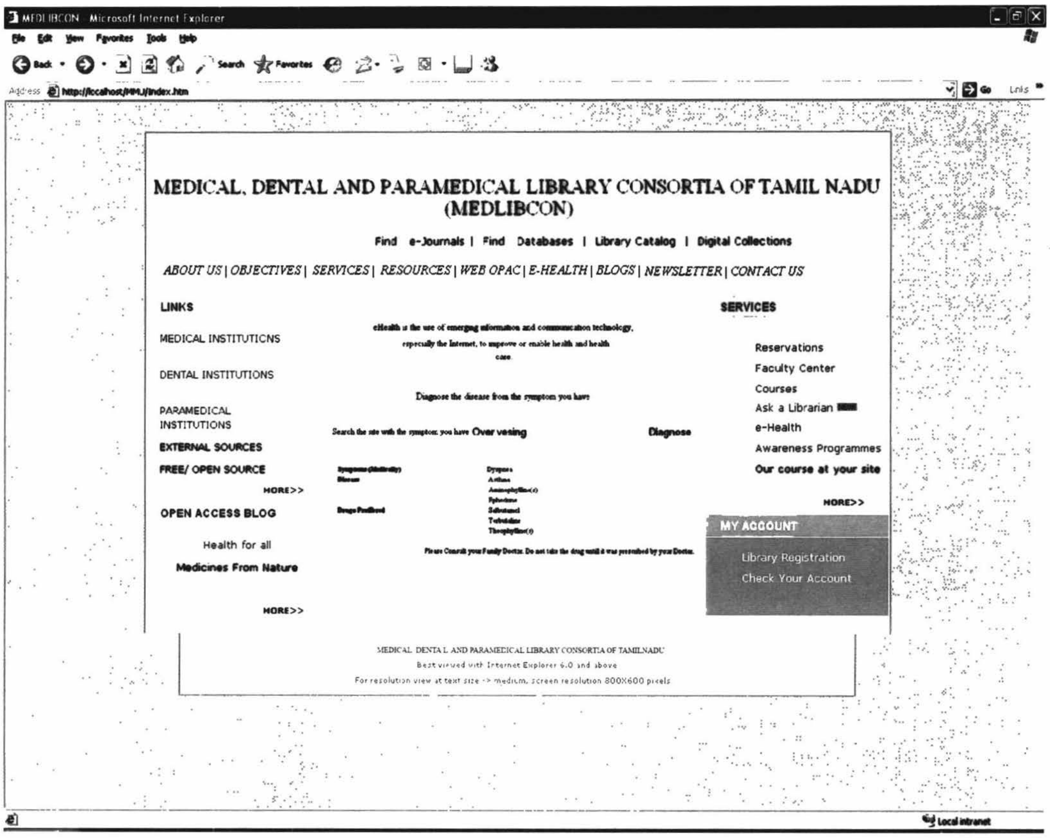


Figure 6.21 Screen showing the Results of the Diagnosis

The output screen in the Figure 6.21 shows the results of the diagnosis of a specified disease.

6.8 TASK AHEAD

The proposed consortia model and plan for implementation will be prepared and the investigator will submit the same to the Department of Medical Education, Government of Tamil Nadu and would emphasise the need for its implementation.

It is further impressed on the authorities to prepare the financial implication, manpower training programmes and necessary infrastructure

facilities in the participating libraries so as to benefit from the consortia. Added to this, all the participating libraries ensured the necessary financial commitments, necessary agreements and operational guidelines in the use of consortia. It is also necessary to develop an evaluation criteria in the effective operation of consortia.

6.9 BY PRODUCTS OF THE STUDY

This present study has contributed for the development of the following by products:

i. List of Medical Education Institutions in Tamil Nadu (upto September 2008) (Appendix C).
ii. Digital Library Resources and Web Sites in Medicine (Appendix D).
iii. Medical News Sites (Appendix E)
iv. List of Medical Associations/Organisations in India (Appendix F).

6.10 DIRECTIONS FOR FURTHER RESEARCH

Based on the research and findings, the investigator has identified the following topics for further research:

i. User survey of medical libraries in Tamil Nadu
ii. Manpower planning in the medical libraries in Tamil Nadu
iii. Collection development in medical libraries in Tamil Nadu
iv. Impact of ICT on the medical library services in Tamil Nadu
v. Performance evaluation of medical libraries in Tamil Nadu.

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Appendix A

Questionnaire

APPENDIX A

G Ravi Sankar
Assistant Librarian
The Tamil Nadu Dr. MGR Medical University
Guindy, Chennai – 600 032
Email: govindanravi@hotmail.com

Research Scholar
Dept. of Information Science
University of Madras
Chepauk
Chennai – 600 005

Dear Sir / Madam,

I introduce myself as a part time research scholar in the Department of Information Science, under guidance of **Dr. B. Ramesh Babu,** Professor, Department of Information Science, University of Madras. My topic of study is **"ICT FACILITIES AND SERVICES IN LIBRARIES OF MEDICAL EDUCATION INSTITUTIONS IN TAMIL NADU: AN ANALYTICAL STUDY"**. In this connection, I seek your valuable help and co-operation.

Please find enclosed questionnaire, which has been designed to elicit your options by marking in the relevant boxes.

I assure you Sir / Madam, the data collected will be kept strictly confidential and used for my research work only.

Please spare your valuable time and fill up the questionnaire.

I solicit your co-operation in this regard.

With regards

Yours sincerely

(G RAVI SANKAR)

QUESTIONNAIRE

PART I : GENERAL INFORMATION

1. (i) Name of the College / Institution :

   Mailing Address :

   Year of Establishment :

   (ii) Type of Institution (Please √ mark)

   University / Deemed University □
   Government □
   Self-financing:

   Others (Please Specify)..............................

   (iii) Nature of courses offered by the Institute / College Please provide following details:

S. No.	Name of the Course	Whether Part Time / Full Time	Duration	Students Intake
1				
2				
3				
4				
5				

PART II : ABOUT LIBRARY

1. **Name of the Library**
   (if assigned)..)

   (i) Academic / Professional Qualifications of the Librarian / In-charge:

2. **Library Staff Details:**
   What is the total strength of Library Staff?
   i) Professional Staff :

   ii) Non – Professional :

3. **Library Users:**

S.No.	Type of Members	Number
1	Students	
2	Teaching Staff	
3	Non-Teaching	
4	Technical	
5	Institutional Members/ Special Members	
6	Others (Please Specify)	

4. **Provision of Library Building:**

   (i) Location of the Library (Please (√) the relevant items.

S.No.	Description	Please (✓)
1	Separate Building	
2	Part of main Building	

   (ii) Total area (in sq.ft.) allotted for the Library:

(iii) Physical facilities of the Library:

S.No.	Description	Please (✓)
1	Furniture / Seating arrangement	
2	Lighting / Ventilation	
3	Reading area / Hall	
4	Research cubicles/Cabins	
5	Air conditioning	
6	Building (Safety aspects)	
7	Printing facilities	
8	Photocopying facilities	
9	Binding facilities	
10	Others (Please specify)	

(iv) Financial Sources:

S No	Sources/Grants	Please (✓)
1	UGC	
2	State Government	
3	Trust / Management grants	
4	Donations / Endowments	
5	Over due charges	
6	Sales of old news papers	
7	Xerox charges	
8	Membership fees, etc.	
9	Any other (Pls. specify)	

5. Collection development policy:

(i) Does your Library have Library Committee? Yes □ No □

(ii) Does your Library have collection development policy? Yes ☐ No ☐

If yes, please (√) the authority is for selecting the books.

S No	Name of the Authority	✓
1.	Library committee	
2.	Head of the Department	
3.	Faculty	
4.	Student representative	
5.	Librarian independently	
6.	Head of the Institution	
7.	Others (Please specify)	

(iii) Do you maintain book selection cards in your Library?
Yes ☐ No ☐

(iv) Please (√) the Book Selection Tools that your are using.

(v) Please (✓) the Mode of purchase / subscription (Book / Journal)

S No	Mode of Purchase / Subscription	✓
1.	By inviting quotation	
2.	Directly from purchaser	
3.	Appointing vendors	
4.	Organise book exhibition	
5.	From local book shops	
6.	Others (Please specify)	

(vi) Do you accept Donated Books? Yes ☐ No ☐

If yes, please (✓) the following:

Individual Collection ☐ Institutions Collection ☐
Government Collection ☐ Any others (please specify) ☐

6. Library Collection Development

(i) Library Resources Collection

S No	Printed Resources / Electronic Resources	Total
1	Books	
2	International Subject Periodicals National	
3	Popular journals English : Tamil : Other Languages:	
4	e-Journals	
5	e-Books	
6	Back – Volumes of Journals	
7	Theses/Dissertations	
8	Reports/Standards/Patents ,etc.	
9	Online Databases	
10	CD ROM Databases	
11	Audio/Video materials	
12	Any others (Please specify)	

7. Technical Processing:

(i) Whether the collection is classified : Yes □ No □
If yes, kindly specify the Scheme of Classification used

S.No.	Name of the Classification	(✓)
1	Colon Classification (CC)	
2	Dewey Decimal Classification (DDC)	
3	Universal Decimal Classification (UDC)	
4	Library of Congress (LC)	
5	Any Others (Please Specify)	

(ii) Whether the collection are Catalogued: Yes □No □
If yes, kindly specify the Catalogue Code adopted

S.No.	Catalogue Code	(✓)
1	CCC	
2	AACR I	
3	AACR II	
4	Others (Please Specify)	

(iii) Please (✓) the subject Index/Heading system used?

S.No.	Subjects Headings List	(✓)
1	Library of Congress Subjects Heading List	
2	Sears List of Subject Headings	
3	Others (Pl. Specify)	

8. Services offered:

(i) Traditional Services:

S No	Type of Service	(✓)
1	Circulation Service	
2	Inter Library Loan	
3	Reference Service	

(ii) Documentation Services:

S.No.	Type of Service	(✓)
1	Indexing Service	
2	Abstracting Service	
3	Current Awareness Service	
4	Selective Dissemination of Information	
5	Reprographic Service	
6	Translation Service	
7	Bibliographic Service	
8	Document Delivery Service	

(iii) Computerised / Internet Services

S.No.	Type of Service	(✓)
1	Online Searching/Internet	
2	E-Mail	
3	e-Journal	
4	e-Books	
5	CD-ROM Database Service	

PART III: AVAILABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGY

1. Do you have computer facility in your library: Yes ☐ No ☐

(i) Servers:

S.No.	Name of Servers	(✓)
1	Data Server	
2	Application Server	
3	CD/Mirror Server	

2. Automation of Library Operations & Services:

(i) Whether your Library is automated : Fully ☐ Partially ☐ No ☐

If yes, please tick the following areas:

S.No.	Areas if Automation	(✓)
1	Online Public Access Catalogue (OPAC)	
2	Acquisition	
3	Catalogue	
4	Circulation	
5	Serial Control	
6	Other areas (Pl. specify)	

ii) Software used for Library Automation:

a. Whether commercial / In-house Software / Open Software?

....

(iii) Whether the Library has Barcode system? : Yes ☐ No ☐

If yes, please state the areas of barcode application:

Journals ☐
Books ☐
ID Cards ☐
Others pl. specify ....

PART – IV: NETWORK CONNECTIVITY: (LIBRARY CO-OPERATION AND NETWORKING)

1. Intranet:

(i) Does your Institution have any of the followings?

LAN ☐
WAN ☐
Intranet ☐
(An Internet operating on your institution's internal network)

(ii) Is your Library participating in any Network? Yes ☐ No ☐

If yes, then please (✓) mark the appropriate box

S.No.	Type of Network	Please (✓)
1	INFLIBNET	
2	MALIBNET	
3	DELNET	
4	ERNET	
5	Other network (pl. specify)	

2. Internet:

(i) Does your institution have established Internet?: Yes □ No □
If yes, pl. (✓) the item

Bandwidth ....

(ii) Type of Internet Connection:

S No	Nature of connectivity	Please (✓)
1	VSAT	
2	Dial Up	
3	Radio Link	
4	Cable Network	
5	ISDN	

(iii) Internet Service Provider (ISP)

VSNL □

BSNL □

Reliance □

Others (Pl. specify) ....

(iv) Do you have home page for your Library Yes □ No □

(v) Internet Service to users is: Fee based □ Free □

PART V: IMPACT ON SERVICES

1. Please indicate your opinion on the following:

(i) Do you feel that computer based information services are better than manual services? Yes □ No □

If yes, in what way computer based information service are better than manual information services. Please give your option about the statements on the followings:

S No	Description	Agree	Disagree
1	Users prefer to search electronic resources before they do a manual search of print versions		
2	Users require orientation to make the maximum use of computer based information services		
3	Computer based information services have a positive effect and thus have improved the image of library		
4	Library staff is required to undergo training periodically to make optimum use of it applications in managing library and information centre		

PART VI: COLLECTION DEVELOPMENT AND INFORMATION AND COMMUNICATION TECHNOLOGY APPLICATIONS

1. Do you feel that information Technology application affects the collection development of your Library? Yes ☐ No ☐

2. If yes, please tick mark in the relevant box:

   (i) ICT affects the regular budgeting provision: Yes ☐ No ☐

   (ii) ICT takes major share from the budget: Yes ☐ No ☐

   (iii) Operational costs are exceeding year by year Yes ☐ No ☐

   (iv) AMC cost of ICT products affect the collection development Yes ☐ No ☐

   (v) Higher salaries for a trained staff is also collection development Yes ☐ No ☐

(vi) Balanced collection development Yes ☐ No ☐

If any other, please specify:

3. If No, Please tick mark in the relevant box:

(i) Adequate fund are provided Yes ☐ No ☐

(ii) Recurring fund allocation is made every year: Yes ☐ No ☐

(iii) Separate funds are provided only for the Purchase of ICT products and for their maintenance Yes ☐ No ☐

(iv) If any other please specifies:

PART VII: STAFF ATTITUDE TOWARDS INFORMATION AND COMMUNICATION TECHNOLOGY APPLICATIONS IN LIBRARY

S.No.	Attitudes	Agree	Disagree	No Opinion
1.	ICT Applications are to improve the quality of the Library and Information Services			
2.	ICT improve the efficiency of the Library			
3.	ICT uses to enhance the knowledge and expertise			
4.	ICT application's uses are essential to improve the communication facilities			
5.	ICT makes an integration within the organization			
6.	ICT application improves the status of the Library and Information Center			
7.	ICT reduces the work load of the Library Professionals			
8.	ICT takes over the traditional way of information handling in the Libraries and Information Centre			

9.	ICT uses often disturb the routine work of the Library.			
10.	ICT application is helpful to obtain the right information at the right time in the right place at the cost			
11.	ICT application will not spoil the image of Library			

PART VIII: REASONS FOR POOR ICT APPLICATIONS

S No	Reasons	Agree	Disagree	No Opinion
1.	Insufficient funds			
2.	Lake of adequate trained staff in ICT application			
3.	Library professionals are not interested in adoption in the ICT application			
4.	Lack of coordination among the library professionals			
5.	Inability to absorb recurring costs			
6.	The Library professionals are not interested to the learning ICT application in the library due to the poor scale of pay for them			
7.	Lack of professional recognition by the authority of the library			
8.	In accurate expectations of information and communication technology			
9.	Lack of coordination in the authorities of the institution			

PART IX : CONSORTIA

1. Do you aware about Consortia? Yes ☐ No ☐

2. Are you willing to join Consortia? Yes ☐ No ☐

3. Reasons for joining Consortia:

S No	Reasons	Strongly Agree	Disagree	No Opinion	Agree	Strongly Agree
1.	Participating inter-library load					
2.	Saving in the cost of journals.					
3.	Sharing of experience					
4.	Co-operative catalogue					
5.	Co-operative collecting development					

4. Reasons for not joining Consortia:

S No	Reasons	Rank
1.	Need more information on network	
2.	Lack of infrastructure	
3.	Inadequate funds	
4.	Lack of co-operation from management	
5.	Inadequate staff	

Appendix B

List of Libraries Surveyed in the Study

APPENDIX B

LIST OF LIBRARIES SURVEYED IN THE STUDY

1. A.J College of Nursing, Thambu Chetty St, Chennai-1
2. A.J College of Pharmacy, Sholinganallur, Chennai-119
3. A.M.S. College of Paramedical,(Physio), Anna Salai, Chennai-1
4. Adhi Parasakthi College of Nursing, Melmaruvathur, Kanchi Dt
5. Adhi Parasakthi College of Physiotherapy, Melmaruvathur, Kanchi Dt
6. Adhi Parasathi College of Pharmacy, Melmaruvathur, Kanchi Dt
7. Akila Thiruvithamcore Sidha Vaidya Kalloory, Kanyakumari
8. Annai J.K.K (Nursing), Komarapalayam, Namakkal
9. Annai Meenakshi College of Nursing, Coimbatore
10. Annai Terasa Institute of Paramedical Sciences, Salem
11. Annai Vellankanni (Pharmacy), Saidapet, Chennai
12. Appollo College of Nursing(Trained), Aynambakkam,Chennai-95
13. Appollo College of Nursing, Aynambakkam, Chennai-95
14. Arulmigu Kalasalingam College, (Pharmacy), Srivilliputhur.
15. Arvind Eye Hospital , Anna Nagar, Madurai
16. Balaji Medical College & Hospital, Chromepet, Chennai-44
17. Bishop College of Nursing, Dharapuram, Erode Dt.,
18. C.L Baid Metha College-Pharmacy, Thorapakkam,Chennai-96
19. C.S.I Jayarani Annapakkaiam, (Nursing), Pasumalai, Madurai
20. Cancer Institute (Higher Speciality), Adyar,Chennai-20
21. Cherans College of Pharmacy, Singanallur, Ciombatore

22. Chengalpattu Medical College, Chengalpattu-603 001
23. Cherans College of Nursing, Coimbatore
24. Cherans College of Physiotherapy, Coimbatore
25. Christian College of Nursing (Neyoor), Neyoor, K.K.Dt.
26. Christian College of Physiotherapy, Colachel, Colachel, K.K.Dt
27. Christian Medical College Vellore,(B.M.R.sc), Thorapadi, Vellore
28. Christian Medical College Vellore,(B.M.R.sc.,), Thorapadi, Vellore
29. Christian Medical College,(Nursing), Vellore
30. Christian medical College,(Trained Nursing), Vellore
31. Coimbatore Medical College, Coimbatore-641 614
32. College of Occupation Therapy (Saveetha Dental), Chennai-77.
33. College of Occupation Therapy C.M.C Vellore,
34. College of Occupation Therapy, J.K.K Muni Raja, B.Komarapalayam
35. College of Physiotherapy Vivekananda College, Thiruchengodu.
36. College of Physiotherapy, C.M.C, Vellore
37. Devendra College of Physiotherapy, Tirunelveli
38. Dhanvanthri College of Nursing, Karungalpalayam, Erode
39. Dharma Ayurvedic Medical Institute, SriPerumbudur
40. Dharmarathnakara Dr.Mahalingam College of nursing, Erode
41. Dr. G. Shakunthala College of Nursing, Thiruvanai Koil, Trichy
42. Erode College of Pharmacy, V.Vellore, Erode
43. Fathima College of Pharmacy, Kadayanallur, T.Veli Dt.,
44. Governemnt Medical College, Vellore - 11
45. Government Siddha Medical College, Palayankottai, Thirunelveli
46. Government Yoga and Naturopathy College, Chennai - 600 106

47. Govt Institute of Rehabilitation, (Physio), K.K. Nagar, Chennai
48. Govt. Mohan Kumaramangalam Medical College, Salem
49. Govt. Siddha Medical College, Arumpakkam,Chennai-106
50. Govt. Unani Medical College, Arumpakkam,Chennai-106
51. Institute of Ophthalmology, Joseph Eye Hospital,Trichy-620001
52. J.K.K College of Physiotherapy, B. Komarapalayam
53. J.K.K Muniraja College Pharmacy, B. Komarapalayam
54. J.K.K Nataraja College of Pharmacy, Komarapalayam, Namakal
55. J.K.K Natarajah Dental College, Komarapalayam, Namakkal Dt.
56. Jaya College of Paramedical,(Physio), Thiruninravur, Chennai
57. Jaya College of Pharmacy, Thiruninravur, Chennai-24
58. K.A.P.Viswanathan Govt. Medical College, Trichy - 17
59. K.M. College of Pharmacy, Uthankudi, Madurai
60. K.M.C.H College of Pharmacy, Kalapatti Road, Coimbatore
61. K.M.C.H College of Physiotherapy, Coimbatore
62. K.M.C.H. College of Occupation Therapy, Coimbatore
63. Kamalakshi Pandurangan College of Pharmacy, Tiruvannamalai
64. Kamalam Viswanathan College of Physiotherapy, Trichy
65. Kanyakumari Government Medical College, Kanyakumari - 629 201
66. Kilpauk Medical College, Chennai-10
67. K.M.C.H College of Nursing, Coimbatore
68. M.A. Chidambaram College of Nursing, Taramani, Chennai-113
69. M.I.O.T College of Nursing, Manapakkam, Chennai
70. Madras Medical College-Nursing, Chennai-1
71. Madha College of Nursing, Kundrathur, Chennai-69

72. Madha College of Physiotherapy, Kundrathur,Chennai-69
73. Madras Medical College, Chennai-3
74. Madras Medical College-Pharmacy, Chennai-1
75. Madurai medical College – Nursing, Madurai
76. Madurai Medical College, Madurai-625 020
77. Madurai Medical College-Pharmacy, Madurai
78. Maharaja College of Physiotherapy, Besant Nagar, Chennai
79. Meenakshi Ammal Dental College and Hospital, Maduravoil, Chennai
80. Meenakshi College of Nursing, Madravoil, Chennai-95
81. Meenakshi College of Occupation Therapy, Maduravoil,Chennai-102
82. Meenakshi College of Physiotherapy, Maduravoil,Chennai-102
83. Mohamed Sathak A J College, (Physio), Nungambakkam, Chennai
84. Mookambika College of Physiotherapy, Kulasekaram, K.K.Dt
85. Nanda College of Pharmacy, Pichandampalayam, Erode
86. Nanda College of Physiotherapy, Pichandampalayam, Erode
87. National Institute of Sidha, Tambaram, Chennai - 600 047
88. Nehru College of Nursing, Valliyur,T.Veli Dt.,
89. Nethra Homoeopathy Medical College Hospital, Coimbatore.
90. Omayal Achi College of Nursing, Avadi, Chennai
91. P.G.P Paramedical Sciences, (Nursing), Coimbatore
92. P.P.G College of Nursing, Saravanmpatty, Coimbatore
93. P.P.G College of Physiotherapy, Saravanmpatty, Coimbatore
94. P.S.G College of Nursing, Peelamedu, Coimbatore
95. P.S.G College of Paramedical,(Physio), Coimbatore
96. P.S.G College of Pharmacy, Peelamedu, Coimbatore

97. P.S.G.Institute of Medical Sciences and Research, Coimbatore
98. Padmavathi College of Nursing, Periyanahalli, Dharmapuri
99. Padmavathi College of Pharmacy, Periyanahalli, Dharmapuri
100. Padmavathi College of Physiotherapy, Dharapuram, Erode Dt.,
101. Pallavan College of Pharmacy, Kanchipuram
102. Periyar College of Pharmacy, Sathanoor Road, Trichy
103. Perundurai Medical College & Research Centre, Perundurai.
104. Pioneer College of Physiotherapy, Ramanathapuram
105. R.V.S College of Nursing, Sulur, Coimbatore
106. R.V.S College of Pharmacy, Sulur, Coimbatore
107. R.V.S College of Physiotherapy, Sulur, Coimbatore
108. Ragas Dental College, Uthandi,Chennai-119
109. Raja Muthiah Dental College & Hospital, Annamalai, Chidambaram
110. Raja Muthiah Medical College, Annamalai University, Chidambaram
111. Rajas Dental College, Vadakkankulam, Tirunelveli Dt.
112. Ranimayyamai College of Nursing, Chidambaram
113. S.A. Raja College of Pharmacy, Vadakankulam, T.Veli.D.t.
114. S.R.M College of Nursing, Kattankulathur, Kanchi Dt.,
115. S.R.M College of Occupation Therapy, Kattankulathur Kanchi Dt.,
116. S.R.M College of Pharmacy, Kattankulathur, Kanchi Dt.,
117. S.R.M College of Physiotherapy, Kattankulathur, Kanchi Dt.,
118. S.R.M. Dental College, Ramapuram, Chennai
119. S.R.M. Medical College, Potheri, Kattankulathur
120. Sacred Heart Nursing College, Thasildarnagar, Madurai
121. Sankara Nethralaya Research Foundation, Chennai-6

122. Santhosh College of Occupation Therapy, Besent Nagar, Chennai
123. Sara College of Nursing, Dharapuram, Erode Dt.,
124. Saradha Krishna Homoeopathy Medical College, Kanyakumari dist.
125. Saveetha College of Nursing, Velpanchavadi, Chennai-77
126. Saveetha Dental College, Velappanchavadi, Chennai-77
127. Shanmuga College of Nursing, Salem
128. Shanmuga College of Physiotherapy, Salem
129. Sharmila College of Nursing, Besant Nagar, Chennai
130. Sree Balaji College of Physiotherapy, Pallikaranai, Chennai
131. Sree Balaji Dental College, Pallikaranai, Chennai
132. Sree Mookambika Institute of Dental Sciences, Kulasekharam.
133. Sree Mookambika Institute of Medical Sciences, Kulasekharam.
134. Sri Balaji College of Nursing, Pallikaranai, Chennai
135. Sri Gokulam College of Nursing, Salem
136. Sri Jeyendrar Saraswathi Ayurveda College, Nazaratpet, T.Valluvar Dt.
137. Sri Mookambika College of Nursing (Trained Nursing), Kulasekaram,
138. Sri Mookambika College of Nursing, Kulasekaram, K.K. Dt
139. Sri Ram Nallamani Yadva College of Pharmacy, T.Veli Dt.,
140. Sri Ramachandra Naidu College, College of Nursing, T.Veli Dt.,
141. Sri Ramakrishna College of Nursing, Coimbatore
142. Sri Ramakrishna Dental College & Hospital, Coimbatore - 641 006
143. Sri Ramakrishna Institute of Pharmacy, Coimbatore
144. Sri Ramakrishna institute (Trained Nursing), Coimbatore
145. Sri Ramakrishna Institute of Physiotherapy, Coimbatore
146. Sri Ramakrishna Yoga and Naturopathy College, Kulasekharam.

147. Sri Ramchandra Medical College & Research Centre, Porur, Chennai
148. Sri Sairam Sidha Medical College and Research Centre, Chennai 45
149. St. Jones College of Nursing, Vellore
150. Stanley Medical College, Chennai-1
151. Swami Vivekananda College of Pharmacy, Thiruchengodu, Namakal
152. Tamil Nadu Government Dental College, Chennai-3
153. Thanjavur Medical College, Tanjavur-613 004
154. Thai Moogambigai Dental College, Mogapair, Chennai
155. Thanthai Rover College of Pharmacy, Permbalur, Trichy
156. The T.N. Dr. M.G.R. Medical University, Guindy, Chennai-32
157. Thirunelveli Medical College, Thirunelveli-627 011
158. Thoothukudi Government Medical College, Thoothukudi - 628 001
159. Trinity Mission College of Physiotherapy, Ultra trust, Madurai
160. U.C.A College of Paramedical Sciences, (Physio), Chetpet, Chennai
161. Ultra College of Pharmacy, Thasildarnagar, Madurai
162. University Institute Pharmaceutical Sciences, (Annamalai University), Chidambaram
163. Vels College of Pharmacy, Pallavaram, Chennai
164. Vels College of Physiotherapy, Pallavaram, Chennai
165. Velumailu Sidha Medical College, Sriperumpudur.
166. Venkateswara College of Nursing, Thalambur, Kanchi Dt.,
167. Venkateswara Homoeopathy Medical College, Porur.
168. Vinayaka Mission Annapurna, (Nursing), Salem
169. Vinayaka Mission College of Pharmacy, Salem
170. Vinayaka Mission College of Physiotherapy, Salem

171. Vinayaka Missions Homoeopathic Medical College, Ariyanoor, Salem
172. Vinayaka Missions Sankaracharya Dental College, Salem
173. Vinayakamission's Kirupananda Variyar Medical College, Ariyanoor, Salem
174. Vivakannanda College of Nursing, Thiuchengodu, Namakal Dt
175. White Memorial College of Physiotherapy, Veeyanoor, Kanyakumari
176. White memorial Homoeopathic Medical College, Attoor.

Appendix C

List of Medical Education Institutions in Tamil Nadu upto September 2008

APPENDIX C

LIST OF MEDICAL EDUCATION INSTITUTIONS IN TAMIL NADU UP TO SEPTEMBER 2008

1. A.C.S.Medical College, Maduravoil, Chennai
2. A.J. College of Pharmacy, Sholinganallur, Chennai-119
3. Aadhi Bhagan College of Pharmacy, Rantham Village, Cheyyar T.k
4. Aalim Muhammed Salegh College of Paramedical (Physio),Chennai-2
5. Adhi Parasakthi College of Nursing, Melmaruvathur, Kanchi Dt.
6. Adhi Parasakthi College of Pharmacy, Melmaruvathur,Kanchi Dt
7. Adhi Parasakthi College of Physiotherapy, Melmaruvathur,Kanchi D.t
8. Adhi Parasakthi Dental College, Melmaruvathur Kanchi Dt.
9. Adhi Parasakthi Medical College Melmaruvathur,Kanchi Dt.
10. Akila Thiruvithamcore Sidha Vaidya Kalloory, Kanyakumari D.t
11. Al-Ameen College of Nursing, Somaspadi, Thiruvannamalai Dt
12. Annai J.K.K. Sampoorani Ammal College of Nursing Komarapalayam
13. Annai J.K.K.Sampoorni Ammal, College of Nursing,(Trained), Komarapalayam, Namakkal Dt.
14. Annai Meenakshi College of Nursing, Industrial Estate, Coimbatore
15. Annai Terasa Institute of Paramedical Sciences,Salem
16. Annai Velankannis Pharmacy College, Saidepet, Chennai
17. Apollo College of Nursing(Trained)Chennai - 600 095
18. Appollo College of Nursing, Chennai-600 095
19. Arulmigu Kalasalingam College of Pharmacy, Krishnankoil, Virudunagar Dt.
20. Arvind Eye Hospital, Anna Nagar, Madurai
21. Ayurveda College 242, Trichy Road, Sulur, Coimbatore
22. Best Dental science College,Melur Road, Kodikulam, Madurai

23. Bharniswathi College of Physiotherapy, Medavakkam, Chennai
24. Bilroth College of Nursing, Maduravoil,Chennai - 95
25. Bishop College of Nursing Darapuram, Erode Dt.
26. C.L.Baid Metha College of Pharmacy, Thorapakkam, Chennai-96
27. C.S.I.College of Dental Sciences & Research, Madurai-625001
28. C.S.I.Jeyaraj Annapackiam, College of Nursing, Pasumalai, Madurai
29. Cancer Institute(Higher Speciality), Adyar, Chennai-20
30. Chengalpattu Medical College, Chengalpattu-603 001
31. Cherans College of Nursing, Telugupalayam P.O., Coimbatore
32. Cherans College of Pharmacy, Singanallur, Coimbatore
33. Cherans College of Physiotherapy, Siruvani Main Road, Coimbatore
34. Chettinad College of Nursing, Kelambakkam, Kancheepuram dist
35. Chettinad Dental College & Research Institute, Pandur - 631 203, Kanchipuram Dt.,
36. Chettinad Hospital and Research Institute, Kancheepuram, Dist.
37. Child Jesus College of Nursing, Cantonment, Trichy 620 001
38. Christian College of Physiotherapy, Colachel, Kanyakumari Dist.
39. Christian College of Nursing Christian Community Health Centre, Ambiliki, Dindigul Dt.
40. Christian College of Nursing Neyoor, Kanyakumari dist. - 629 802
41. Christian Fellowship Community Health Centre (M.Sc., Epid), Ambilikki, Dindigul Dt.
42. Christian Medical College (B.MRsc.,), Bagayam, Vellore
43. Christian Medical College (B.Sc., MLT), Bagayam, Vellore
44. Christian Medical College (M.Sc., Bio-Statistics), Bagayam, Vellore
45. Christian Medical College (Msc., Microbiology), Bagayam, Vellore
46. Christian Medical College(Msc., Bio-Chemistry), Bagayam, Vellore
47. Christian Medical College,(Medical) Vellore - 632 002
48. Coimbatore Medical College, Coimbatore - 641 614
49. College of Nursing (Madurai), Madurai Medical College, Madurai

50. College of Nursing Christian Medical College and Hospital, Vellore-4
51. College of Nursing Christian Medical College (Trained), C.M.C.Vellore-2
52. College of Nursing K. G. Hospital, Coimbatore - 641 018
53. College of Nursing M.M.C. (For Trained Nurses), Chennai-3
54. College of Nursing Saveetha Dental College & Hospital, Chennai-77
55. College of Nursing Vel R. S. Medical College,Chennai - 600 062
56. College of Nursing, Madras Medical College, Chennai-3
57. College of Nursing, Sri Ramakrishna Institute of Paramedical Sciences (Trained Nurses), Sarojini Naidu Road, Coimbatore
58. College of Nursing, Sri. Ramakrishna Institute of Paramedical Sciences, Sarojini Naidu Road, Coimbatore
59. College of Occupational Therapy, Christian Medical College, Vellore
60. College of Occupational therapy, J.K.K.Munirajah Medical Research Foundation, B.Komarapalayam - 638 183, Namakkal dist.
61. College of Occupational Therapy, Saveetha Dental College & Hospital, Velappanchavadi, Chennai-77
62. College of Pharmacy, Sri.Ramakrishna Institute of Para Medical Sciences, Sarojini Road, Coimbatore
63. College of Pharmacy, Madurai Medical College, Madurai
64. College of Physiotherapy, Christian Medical College, Vellore
65. College of Physiotherapy (Saveetha), Saveetha Dental College & Hospital, Velappanchavadi, Chennai-77
66. College of Physiotherapy J.K.K.Munirajaha Medical Research Foundation, B.Kumarapalayam, Namakkal D.t
67. College of Physiotherapy,Vivekananda Institute of Medical Sciences & Research, Thiruchengodu T.k, Namakkal Dt.
68. College of Physiotherapy, Trinity Mission and Medical Foundation, Madurai

69. College of Physiotherapy, Sri Ramakrishna Institute of Paramedical Sciences, Sarojininaidu Road, Coimbatore
70. Devendra College of Physiotherapy, Tirunelveli - 627 351
71. Dhanalakshmi Srinivasan College of Nursing, Perambalur - 621 212
72. Dhanvanthri College of Nursing, Erode - 638 003
73. Dharma Ayurvedic Medical Institute, Sri Perumbudur
74. Dharmapuri Government Medical College, Dharmapuri
75. Dharmarathnakara Dr. Mahalingam Institute of Paramedical Sciences and Research, Sakthi Nagar , Erode dist.
76. Dr. G. Sakunthala College of Nursing, Trichy – 620 005
77. Dr. Hahnemann Homoeopathy Medical College & Research Centre, Rasipuram - 637 408
78. E.V.P. College of Physiotherapy, Tiruvallur dist. - 602 103
79. Edayathangudy G.S. Pillay College of Pharmacy, Nagapattinam - 611 002
80. Ellen College of Nursing, Gandhipuram, Coimbatore - 641 012
81. Fathima College of Pharmacy, Kadayanallur, Tirunelveli Dt.
82. Ghandhi Institute of Rural Health and Family Welfare Trust (P.G), Ambathurai, Dindigul Dt.
83. Gokulam Institute of Paramedical Sciences (B.P.T), Salem
84. Govt.Medical College, Vellore
85. Govt.Theni Medical College, Theni.
86. Govt. Siddha Medical College, Palayankottai, Thirunelveli
87. Govt.Yoga and Naturopathy College,Arumbakkam Chennai - 600 106
88. Govt. Institute of Rehabilitation Medicine, K.K.Nagar, Chennai-83
89. Govt.College of Physiotherapy, Periamilaguparai, Trichy.620001
90. Govt.Homoeopathic Medical College, Thirumangalam, Madurai
91. Govt.Mohan Kumaramangalam Medical College, Salem
92. Govt.Siddha Medical College, Arumbakkam, Chennai-106
93. Govt.Unani Medical College, Arumbakkam, Chennai-106

94. Indira College of Nursing, Pandur - 631 203, Thiruvallur dist.
95. Institute of Ophthalmology, Joseph Eye Hospital, Trichy-620001
96. J K College of Nursing & Para medicals, Coimbatore - 641 015
97. J.K.K Natarajah Dental College, Komarapalayam, Namakkal Dt.
98. J.K.K.Munirajah Medical Research Foundation College of Pharmacy, B.Kumarapalayam, Namakkal Dt.
99. J.K.K.Natarajaha College of Pharmacy, Komarapalayam,
100. J.S.S.College of pharmacy, Elkhill Road, Udagamandalam
101. J.S.S.Institute of Naturopathy &Yogic Sciences, Mysore Road, Ooty
102. Jainee College of Nursing, Muruga Bhavan, Dindigul
103. Jaya College of Para - Medical Sciences (Phy), Tiruninravur, Tiruvallur Dist.
104. Jaya Paramedical Educational institute (B.Pharm) Kundrathur, Chennai - 69
105. K.G. College of Physiotherapy, Coimbatore - 641 035
106. K.A.P.Viswanathan Govt. Medical College, Trichy - 17
107. K.G. College of Nursing, 2, Arts College Road, Coimbatore
108. K.K.Collge of Pharmacy, Arcot Road, Saligramam
109. K.M. College of Pharmacy, Uthangudi, Madurai-625107
110. K.M.C.H College of Nursing, Avinashi Road, Coimbatore
111. K.M.C.H College of Physiotherapy, Avinashi Road, Coimbatore
112. K.M.C.H.College of Occupational Therapy, Avinashi Road, Coimbatore
113. K.M.C.H.College of Pharmacy, Avinashi Road, Coimbatore
114. K.R.S Pallavan College of Pharmacy, Valapuram P.O, Sriperumbudur T.K, Kanchi D.T.
115. K.S.R Institute of Dental Science and Research, Tiruchengodu, Namakkal dist.
116. Kamalakshi Pandurangan College of Pharmacy, Tiruvannamalai
117. Kamalam Viswanathan College of Physiotherapy, Trichy - 620 008

118. Kanyakumari Government Medical College, Kanyakumari - 629 201
119. Karpaga Vinayaka College of Nursing, Sivapuram, Mamansamudhram P.O, Pudukottai
120. Karpaga Vinayaka institute of Dental Science, Chinna Kolambakkam, Madhuranthagam T.K
121. Karpagam College of Nursing, Othakalmandapam Village Coimbatore - 641 032
122. Karpagam College of Pharmacy, Coimbatore - 641 032
123. Kavimony College of Physiotherapy, Coimbatore
124. Kilpauk Medical College, Chennai-10
125. M.A.Chidambaram College of Nursing, Taramani, Chennai-113
126. M.M.Academy of Medical sciences, Nolambur, Thiruvalluvar Dt.,
127. M.M.M.College of Nursing, Nolambur, Thiruvalluvar Dt.,
128. Madha College of Nursing Kundrathur, Chennai - 600 069
129. Madha College of Physiotherapy, Kundrathur,Chennai - 600 069
130. Madha Dental College & Hospital, Kundrathur, Chennai-69
131. Madras Medical College (B.Pharm), Park Town, Chennai
132. Madras Medical College,(Medical) Chennai-3
133. Madurai Medical College,(Medical) Madurai-625 020
134. Maharaja College of Physiotherapy, Besant Nagar, Chennai-90
135. Maharaji College of Pharmacy, Besent Nagar, Chennai-90
136. Mannai Narayanaswamy Paramedical College, Thanjavur - 641 004
137. Matha College of Nursing (Trained), Vanapuram, Madurai
138. Matha College of Nursing, Manamadurai, Sivaganga Dt.
139. Matha College of Physiotherapy, Manamadurai - 630 606
140. Meenakshi College of Occupational Therapy, Maduravoyal,Chennai -
141. Meenakshi Ammal Dental College and Hospital, Maduravoil, Chennai
142. Meenakshi College of Nursing, Maduravoyal, Chennai - 602 102
143. Meenakshi College of Physiotherapy & Hospital, Maduravoyal, Chennai

144. Meenakshi Medical College & Research Institute, Kancheepuram Dist. - 631 552
145. MIOT College of Nursing, Manapakkam, Chennai - 600 089
146. Mogambigai College of Physiotherapy, Mugappair,Chennai - 600 107
147. Mohammed Sathak A. J. College of Nursing, Chennai - 600 001
148. Mohammed Sathak A. J.College of Physiotherapy, Nungambakkam, Chennai - 600 034
149. Nandha College of Nursing, Koorapalayam Pirivu, Erode-638052
150. Nandha College of Nursing(Trained) Pichandampalayam, Erode
151. Nandha College of Pharmacy, Thindal, Erode
152. Nandha College of Physiotherapy, Pichandampalayam, Erode
153. National Institute of Sidha, Tambaram, Chennai-600 047
154. Nehru College of Nursing, Vallioor - 627 117, Tirunelveli Dist.
155. Nethra Homoeopathy Medical College Hospital, Gandhipuram, Coimbatore - 641 012
156. Omayal Achi College of Nursing, Avadi, Chennai
157. P.P.G. College of Nursing Saravanapatty, Coimbatore - 641 035
158. P.P.G. College of Physiotherapy, Coimbatore - 641 035
159. P.S.G. College of Pharmacy, Coimbatore - 641 004
160. P.S.G. College of Paramedical Sciences (Physio), Peelamedu - 641 004
161. P.G.P.College of Pharmaceutical Science & Research, Villipalayam, Namakkal Dt.,
162. P.S.G.College of Nursing, Peelamedu, Coimbatore
163. P.S.G.Institute of Medical Sciences and Research, Peelamedu, Coimbatore
164. Padmasree College of Nursing Masilamani Nagar, Waljabad, Kanchipuram-631605
165. Padmavathi College of Nursing, Periyanahalli, Dharmapuri
166. Padmavathi College of Pharmacy, Periyanahalli, Dharmapuri

167. Padmavathi College of Physiotherapy, Winding Driver Chinnaswami Street, Dharmapuri
168. Pallavan Pharmacy College, Iyangarkulam, Kanchipuram dt.
169. Pasteur Institute of India(M.D.Microbiology), Coonoor, The Nilgiris
170. Pearl Peace Medical Mission, College of Pharmacy, Pettai,Tirunelveli
171. Periyar College of Pharmaceutical Sciences for Girls, Sathanoor Main Road, Trichy-620021
172. Perundurai Medical College & Research Centre, Perundurai Sanitorium Periyar Dt.
173. P.G.P College of Nursing & Research, Namakkal - 637 207
174. Pioneer College of Physiotherapy, Madurai Road, Ramanathapuram
175. Priyadarshni Dental College & Hospital, Pandur, Thiruvallur dist.
176. Pudukottai Para Medical College, Thirukogarnam, Pudukottai
177. R.V.S Siddha Medical College & Hospital, Kumarankottam, Kannampalayam, Coimbatore
178. R.V.S. Homoeopathy Medical College, Sulur, Coimbatore - 641 402
179. R.V.S.College of Nursing, Sulur, Coimbatore
180. R.V.S.College of Pharmaceutical Sciences, Sulur, Coimbatore
181. R.V.S.College of Physiotherapy, Sulur, Coimbatore
182. R.V.S.Siddha Medical College, Kovai
183. Rabindranath Tagore College of Nursing For Women, Veerachipalayam - 637 303, Salem
184. Ragas Dental College, Uthandi, Chennai-119
185. Raja Muthiah Dental College & Hospital, Annamalai University, Chidambaram
186. Raja Muthiah Medical College, Annamalai University, Chidambaram
187. Rajas Dental College, Vadakkankulam, Tirunelveli Dt.
188. Rani Meyyamai College of Nursing, Annamalai University, Chidambaram
189. Rass Academy College of Nursing, Poovanthi, Sivagangai Dist.

190. Right College of Nursing, Sivabootham Village, Vannagaram, Chennai-95
191. S.A.Raja College of Pharmacy, Vadakankulam, Tirunelveli dt.
192. S.R.M.College of Nursing, Ramapuram, Chennai
193. S.R.M.College of Occupational therapy, Ramapuram, Chennai
194. S.R.M.College of Pharmacy, Kattankulathur, Kanchipuram Dt.
195. S.R.M.College of Physiotherapy, Ramapuram, Chennai
196. S.R.M.Dental College, Ramapuram, Chennai
197. S.R.M.Medical College, Potheri, Kattankulathur
198. Sacred Heart Nursing College, Thasildar Nagar, Madurai
199. Sakthi College of Nursing, Achi Mangalam, Thanthonimalai, Karur
200. Sakthi College of Nursing, Dindigul,Oddanchatiram.
201. Sankara Nethralaya Research Foundation, Chennai-6
202. Sankarlingam Bhuvaneswari College of Pharmacy, Anaikuttam, Sivakasi
203. Santhosh College of Occupational therapy, Besent Nagar, Chennai-90
204. Sara College of Nursing, Darapuram, Erode Dt.
205. Saradha Krishna Homoeopathy Medical College, Cheruppaloor, Kanyakumari Dist. - 629 161
206. Saveetha Dental College, Velappanchavadi, Chennai-77
207. Saveetha Medical College, Kattankulathur
208. Shanmuga College of Nursing, Salem - 636 007
209. Shanmuga College of Physiotherapy Salem - 636 007
210. Sharmila College of Nursing, Besant Nagar, Chennai-90
211. Siva Parvathi Mandradiyar Institute of Health Sciences (Nursing), Palayankottai, Nathakadaiyur, Erode Dt.,
212. Sofia Dental Colllege, Nagamangalam,Trichy-620 012
213. Sree Balaji College of Physiotherapy, Pallikaranai, Chennai - 601 302
214. Sree Balaji Dental College, Pallikaranai, Chennai

215. Sree Mookambika College of Nursing (Trained), Kulasekharam Kanyakumari dist.
216. Sree Mookambika Institute of Dental Sciences, Kulasekharam Kanyakumari dist.
217. Sree Mookambika Institute of Medical Sciences (M.B.B.S), Kulasekharam , Kanyakumari dist.
218. Sri Aurobindo College of Nursing, Attur Village, Vennaimalai,P.O, Karur
219. Sri Balaji College of Nursing, Pallikaranai, Chennai
220. Sri Balaji Medical College & Hospital Chromepet, Chennai-44
221. Sri Gokulam College of Nursing, Salem - 636 010
222. Sri Jeyendrar Saraswathi Ayurveda College, Nazaratpet, T.Valluvar Dt.
223. Sri K. Ramachandran Naidu College of Nursing, Perumalpatti (Post) Tirunelveli dist.
224. Sri Mogambika College of Physiotherapy, Kulasekharam 629 161, Kanyakumari dist.
225. Sri Narayani College of Nursing, Vellore - 632 055
226. Sri Ram Nallamani Yadav College (B.Pharm), Kodikurichi, Tirunelveli Dt.
227. Sri Ramakrishna Dental College & Hospital, Coimbatore - 641 006
228. Sri Ramakrishna Yoga and Naturopathy College, Kulasekharam, Kanyakumari dist.
229. Sri Ramchandra Medical College & Research Centre, Porur, Chennai
230. Sri Sairam Ayurveda Medical College and Research Centre, West Tambaram, Chennai
231. Sri Sairam Homoeopathy Medical College and Hospital, West Tambaram, Chennai
232. Sri Sairam Sidha Medical College and Research Centre, West Tambaram, Chennai
233. Sri Sankara College of Ayurveda, Trichy - 620 009

234. Sri.Mookambika College of Nursing, Padanilam, Kulasekaram
235. Sri.Venkatesara Dental College & Hospital, Thalambur, Kancheepuram dist.
236. Sri Sakthi Mayeil Institute of Nursing, Komarapalayam P.O, Thiruchengodu T.K
237. ST. John's College of Nursing, Vellore - 632 001
238. ST.Xavier's Catholic College of Nursing, Aloor - 629 807, Kanyakumari dist.
239. Stanley Medical College, Chennai-1
240. Swami Vivekananda College of Pharmacy, Thiruchengodu Tk, Namakkal Dt.
241. Tagore Dental College Hospital, Vandalore,Chennai-48
242. Tamil Nadu Government Dental College, Chennai-3
243. Tamil Nadu Homoeopathy Medical College, Salem - 636 307
244. Tamilnadu College of Naturopathy & Yoga Research, Yercaud, Salem
245. Tamilnadu Paramedical Institutions (Physio), Kottivakkam, Chennai-41
246. Thanjavur Medical College, Tanjavur-613 004
247. Texcity College of Nursing, Coimbatore - 641 023
248. Thai Moogambigai Dental College, Mogapair, Chennai
249. Thanthai Roever College of Nursing, Perambalur - 621 212
250. Thanthai Rover College of physiotherapy, Perambalur, Trichy
251. Thanthai Rower College of Pharmacy, Perambalur, Trichy
252. The Erode College of Pharmacy, V.Vellore, Erode
253. The T.N.Dr.M.G.R. Medical University, Guindy,Chennai-32
254. Thirunelveli Medical College, Thirunelveli-627 011
255. Thoothukudi Government Medical College, Thoothukudi - 628 001
256. U.C.A College of Paramedical Sciences (Phy), Chennai
257. Ultra College of Pharmacy, Anaikuttam, Sivakasi

258. University Institute of Pharmaceutical Technology, Annamalai University, Chidambaram
259. Vel R. S. Medical College of Physiotherapy,Chennai - 600 062
260. Vel's College of Pharmacy, Old Pallavaram, Chenai-117
261. Vel's College of Physiotherapy, Old Pallavaram, Chenai117
262. Velumailu Sidha Medical College, Sriperumpudur, Kancheepuram dist
263. Venkateswara Homoeopathy Medical College, Porur, Chennai-600 116
264. Venkateswara Nursing College, Thalambur, Kancheepuram dist.
265. Venkatramana Ayurveda College, Periyar Nagar, Chennai-80
266. Vinayaka Missions Homoeopathic Medical College, Ariyanoor, Salem
267. Vinayaka Missions Sankaracharya Dental College, Ariyanoor, Salem
268. Vinayakamissions Annapoorna College of Nursing, Cinnaseeragapadi, Salem
269. Vinayakamissions College of Pharmacy, Kondappanaickanpatty, Salem
270. Vinayakamissions College of Physiotherapy, Ariyanoor, Salem
271. Vinayakamission's Kirupananda Variyar Medical College, Ariyanoor, Salem
272. Vivekananda College of Nursing, Thiruchengodu Tk, Namakkal Dt.
273. Vivekananda Dental College for Women, Thiruchengodu, NamakkalDt
274. White Memorial College of Physiotherapy, Veeyannoor - 629 177
275. White memorial Homoeopathic Medical College, Veeyanoor P.O. Attoor.

Appendix D

Digital Library Resources and Web Sites in Medicine

APPENDIX D

DIGITAL LIBRARY RESOURCES AND WEB SITES IN MEDICINE

Medical Directories

1. Doctors Guide to the Internet.
   (http://www.pslgroup.com/doguide.htm)
2 Hardin Meta Directory of Internet Health Sources.
   (http://www.pslgroup.com/doguide.htm)
3. Medical Matrix.
   (http://www.medmatrix.org/)
4. MedWeb.
   (http://www.cc.emory.edu/WHSCL/)
5. Physician's Guide to the Internet Physician Links.
   (http://www.webcom.com/pgi)
6. WebDoctor.
   (http://www.gretmar.com)

CME and Information Sites

1. Avicenna Medical Information Resources.
   (http://www.avicenna.com)
2. BioMedNet
   (http://www.biomednet.com)
3. GeoHealthWeb
   (http://www.geohealthweb.com)

4. Healthgate
   (http://www.healthgate.com)
5. Housecall for Healthcare Professionals
   (http://www.pressconf.housecall.com/prolong.html)
6. MedConnect Information Service
   (http://www.medconnect.com)
7. MedNexus Internet Medical Community
   (http://www.mednexus.com)
8. Medscape
   (http://www.medscae.com)
9. Net medicine Medical Information Source.
   (http://www.netmedicine.com)
10. NUS Medical SignPost
    (http://www.ch.nus.sg.)
11. Pharmametrics Physician's Resources WWW Server
    (http://www.pharmiq.com/docpage.htm)
12. Physicians Corner at Columbia/HCA Healthcare
    (http://www.columbia.net/physian)
13. Physicians Home Page at Silver Platter
    (http://www.php2.silverplatter.com/physicians)
14. Physicians Online Medical Reference Online Service
    (http://www.po.com)
15. The CoMed
    (http://www.comed.com/index.html)

Journals and Textbooks

1. BioMedNet Electronic Press
   (http://www.cursci.co.uk/BioMedNet/biomed.s)
2. British Medical Journal
   (http://www.bmj.com)
3. Journal of the American Medical Association (JAMA)
   (http://www.ama-assn.org/public/journals/jama/jamahome.htm)
4. Modern Medicine
   (http://www.modernmedicine.com/modern/index.htm)
5. New England Journal of Medicine
   (http://www.nejm.org)
6. The Intern On-Call Handbook
   (http://www.obsu.edu/cliniweb/intern/intindx.html)
7. The Lancet
   (http://www.thelancet.com)
8. The Merck Manual
   (http://www.merck.com

Multimedia Medical Sites

1. Martindale's Health Science Guide
   (http://www.sci.lib.uci.edu/~martindale/HSGuide.html)
2. Multimedia Medical Reference Library
   (http://www.med-library.com)
3. Prime Practice
   (http://www.ivi.com/corp/primepractice/html/pp_etc.html)

4. The Virtual Hospital
   (http://www.indy.radiology.uiowa.edu/VirtualHospital.html)

Medical News Letters

1. Center for Disease Control
   (http://www.cdc.gov)
2. CNN Health News
   (http://www.cnn.com/HEALTH/index.html)
3. Reuters Health Information Services
   (http://www.reutershealth.com)
4. USA Today
   (http://www.usatoday.com/life/health)
5. WHO Home Page
   (http://www.who.ch)

Medical Databases

1. MEDLINE.
   http://www.nebi.nlm.nih.gov/pubmed
2. COCHRANE Database of Systematic Reviews
   http://www.update-software.com/cochrane.htm
3. EMBASE. Body
   http://www.healthgate.com/help/price/embase.shtml
4. BIOTEICLINE.
   http://www.igm.nim.nih.gov
5. CANCERLIT
   http://www.cancernet.nci.nih.gov/canlit/cltopic.htm

6. Psyc INFO .

   http://www.healthgate.com/help/price/psyc.info.shtml

7. WISDOM

   http://www.wisdom.wellcom.ac.uk/wisdom/fundhome.html

8. Database of Abstracts of Reviews of Effectiveness

   http://www.nhscrb.york.ac.uk

9. Pharmaceutical Information Network .

   http://www.phar.info.com

10. AIDS LINE, AIDS DRUGS & AIDS TRIALS

    http://www.healthgate.com/choice/AMA/search.html

e-Journals

1. JAMA .

   http://www.jama.com

2. British Medical Journal

   http://www.bmj.com

3. New England Journal of Medicine .

   http://www.nejm.org

4. Annals of Internal Medicine

   http://www.acponline.org/journals/annals/annaltoc.htm

5. The Lancet

   http://www.thelancet.com/

6. Journal of Clinical Jhuestigation

   http://www.int.jei.org/

Indian e-Journals on Medical Sciences

1. Med IND: Database of full text of Indian Medical Journals
   http://www.medind.nic.in
2. Bombay Hospital Journal
   http://www.bhj.org/
3. Indian Heart Journal
   http://www.indianheartjournal.org
4. Indian Journal of Community Medicine
   http://www.indmedica.com/journals
5. Indian Journal of Pharmacology
   http://www.ijp-online.com
6. Indian Pediatrics
   http://www.indianpediatrics.net/index.htm
7. Indian Pacing and Electrophysiology Journal
   http://www.ipej.org
8. Indian Journal of Radiology and Imaging
   http://www.ijri.org
9. Journal of Post Graduate Medicine
   http://www.jpgmonline.com
10. Journal of the Academy of Hospital Administration
    http://www.indmedica.com/journals

Other Useful Sites

1. Cyberspace Telemedicine Medical Support Services
   (http://www.telemedical.com/~drcarr)
2. Life in Medicine Forum
   (http://www.webcom.com/pgi/doctalk.html)

3. Medicine On Line Medical Information Service
   (http://www.meds.com/mol/molinfo.html)
4. Med Source Healthcare Information
   (http://www.medsource.com/index.html)
5. Point's Top 5% - Professional Medical Sites
   (http://www.point.lycos.com/categories/health)
6. PPSOnline Web Medical Information Distribution
   (http://www.pps.ca)
7. Practice Link
   (http://www.practicelink.com)
8. Six Sense
   (http://www.sixsenses.com)
9. SMA General Discussion Newsgroups
   (http://www.sma.org/wwwboard/wwwboard.html)

Medline Access through Internet

1. Meds cape MEDLINE
   (http://www.medscape.com/textsearch.form.fegi)
2. HealthGate MEDLINE
   (http://www.healthgate.com)
3. Evaluated Medline through Biomednet
   (http://biomednet.com/db/medline)

Appendix E

Medical News Sites

APPENDIX E

MEDICAL NEWS SITES

1. http://findadentist.dentistryonline.com: DentistryOnline.com
2. http://us.yimg.com/images/new2.gif: nationwide database of dentists
3. http://asmile.com: A Smile is forever
4. http://dentalinks.com: Accessible Dentalinks
5. http://www.abfo.org/: American Board of Forensic Odontology.
6. http://www.dentalsales.com/: American Dental Sales
7 http://www.urbonline: American Dentist Website Directory
8. http://www.800dentis: Applied Anagramics 1-800-DENTIST.
9. http://www.datawww.com/dentists: Bay Area Dentists Directory
10. http://www.DDS4U.com/: DDS4U – Dentist For You.
11. http://www.catalog.com/cgibin/var/dale/index2.html: Dental Directory Service
12. http://www.dental: Dental Icon.
13. http://www.gbsystems.com/: Dental World.
14. http://www.dentalbank.com: Dental Bank.
15. http://www.dentaldocshop.com: Dental Doc Shop.
16. http://dentistdirectory.com/: Dentist Directory.
17. http://www.dentisthotline.com: Dentist Hotline.
18. http://www.dentistzone.com/: Dentist Zone – Texas.

19. http://www.dentistinfo.com/: Dentistinfo.com.

20. http://www.dentistry2000.com: Dentistry 2000.

21. http://www.dentistrynow.com/: Dentistry Now.

22. http://www.docsonline.com/: Docsonline.

23. http://www.findadentist.net: Find A Dentist.

24. http://www.nationaldirectories.net/: Find-A-Dentist.

25. http://www.futuredontics.com: Futuredontics.

26. http://www.mindspring.com/~cncleod/: Highlander Index of Dental Resources.

27. http://www.alhealthnet.com

Appendix F

List of Medical Associations / Organisations in India

APPENDIX F

LIST OF MEDICAL ASSOCIATIONS / ORGANISATIONS IN INDIA

1. Indian Health Organisation

   http://www.wwindia.com/iho/

2. Indian Leprosy Association

   http://www.indiasocial.org/leprosyindia/

3. Indian Medical Association

   http://www.webcottage.net/ima/

4. Indian Medical Association Dehra Dun

   http://www.education.vsnl.com/imaddn/

5. Indian Medical Association Gujarat

   http://www.imagujarat.org/

6. Indian Medical Association Karnataka

   http://www.imaksb.com/

7. Indian Orthopaedic Association

   http://www.indianorth.org/assoc/ica.htm

8. Indian Pharmaceutical Association

   http://www.indianpharma.org/

9. Indian Pharmaceutical Society

   http://www.ijp-online.com/caips1.htm

10. Indian Psychiatric Society

    http://www.ipsonline.org/

11. Indian Society for Applied Behavioural Science

    http://www.isabs.org/

12. Indian Society for Bone and Mineral Research

    http://www.boneindia.org/

13. Indian Society for Emergency Medicine

    http://www.indsem.org

14. Indian Society for Pediatric Neurosurgery

    http://www.indspn.com

15. Indian Society of Anaesthesiologists

    http://www.isa-india.org/

16. Indian Society of Critical Care Medicine

    http://www.isccm.org/

17. Neurological Society of India

    http://www.neurosocietyindia.com/

18. Paediatric Orthopaedic Society of India

    http://www.posionline.com/

19. Parkinson's Disease Foundation of India

    http://www.indiobuzz.com/pdfi/

20. Plasma Science Society of India

    http://www.plasma.emet.in/-pssi

21. Population Foundation of India .

    http://www.popfound.org/

22. Qualified Private Medical Practitioners' Association

    http://www.qpmpa.com/

23. Radiological Education Foundation

    http://www.redindia.net

24. Schizophrenia Research Foundation

    http://www.scarfindia.org/

25. Society for Alcohol & Social Policy Initiative .

    http://www.education.vsnl.com/saspi/

26. Society for Asthma Care and Research

    http://www.asthmacare.org/

27. The Indian Radiological & Imaging Association

    http://www.indianradiologist.com/iria1.htm

28. The Indian Society for Parasitology

    http://www.parasitologyindia.org/

29. The Indian Society for Parenteral & Enteral Nutrition

    http://www.hostindia.com/ispen/index.htm

30. The Professor B. A. Bharucha Foundation

    http://www.babfoundation.org/

31. The Trained Nurses' Association of India

    http://www.health4india.com/new/nurses/tnai.asp

32. Trainers of AIDS

    http://www.expage.com/page/aidstrainers

33. Trauma Care Consortium

    http://www.traumacare.org.in/

34. UNAIDS

    http://www.unaids.org.in/

35. Urological Society of India

    http://www.usi.org/

36. Vasantha Memorial Trust

    http://www.vasantha.org/